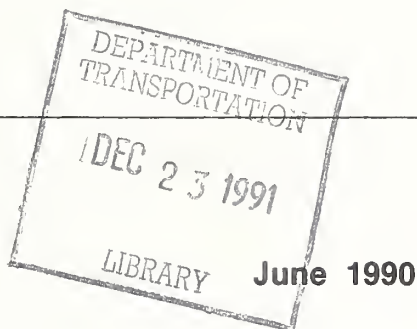




US Department  
of Transportation  
**National Highway  
Traffic Safety  
Administration**



**DOT HS 807 661**  
**Final Report**

# **EVALUATION OF THE BIOSID DUMMY MDB-To-Car Side Impact Test of a 26° Crabbed Moving Deformable Barrier into a 1987 Ford Taurus 4-door sedan at 33.5 MPH**



1. Report No. DOT HS 807 661	2. Government Accession No.	3. Recipient's Catalog No.																												
4. Title and Subtitle EVALUATION OF THE BIOSID DUMMY. MDB-To-Car Side Impact Test of a 26° Crabbed Moving Deformable Barrier into a 1987 Ford Taurus 4-door sedan at 33.5 MPH		5. Report Date MAY - JUNE, 1990																												
		6. Performing Organization Code																												
7. Author(s) N.A. El-Habash, Project Engineer, TRC		8. Performing Organization Report No. 900514																												
9. Performing Organization Name and Address Vehicle Research and Test Center 10820 State Route 347 East Liberty, Ohio 43319		10. Work Unit No. (TRAIS)																												
		11. Contract or Grant No. DTNH22-88-C-07292																												
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration 400 Seventh St., S.W., Washington, D.C. 20590		13. Type of Report and Period Covered FINAL REPORT MAY - JUNE, 1990																												
		14. Sponsoring Agency Code																												
15. Supplementary Notes This test was conducted as part of VRTC Project No. VRTC-89-0138 Evaluation of the BioSid Dummy																														
16. Abstract This test report documents a crash test to evaluate the response of BioSid dummies in a moving deformable barrier into stationary vehicle side impact crash test. Testing was conducted on a 1988 Ford Taurus 4-door Sedan at the TRC Crash Test Facility, East Liberty, Ohio. The test vehicle was impacted on the left side by a moving deformable barrier, crabbed to 26°, at 33.5 mph. The test was a simulation of a 90° intersection collision with the striking vehicle travelling 30 mph and the struck vehicle travelling at 15 mph. Occupant responses of two side impact dummies were measured. One dummy was located in the driver's designated seating position and one was located in the left rear seating position. The test date was May 14, 1990 and the ambient temperature was 70°F.																														
<table border="1"> <thead> <tr> <th></th> <th><u>DRIVER</u></th> <th><u>PASSENGER</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC)</td> <td>227</td> <td>593</td> </tr> <tr> <td>Upper Spine Acceleration,g</td> <td>55</td> <td>41</td> </tr> <tr> <td>Left Upper Rib Acceleration,g</td> <td>106</td> <td>72</td> </tr> <tr> <td>Left Center Rib Acceleration,g</td> <td>94</td> <td>75</td> </tr> <tr> <td>Left Lower Rib Acceleration,g</td> <td>111</td> <td>89</td> </tr> <tr> <td>Lower Spine Acceleration,g</td> <td>58</td> <td>72</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td>84</td> <td>80</td> </tr> <tr> <td>Pelvis Acceleration, g</td> <td>83</td> <td>115</td> </tr> </tbody> </table>					<u>DRIVER</u>	<u>PASSENGER</u>	Head Injury Criteria (HIC)	227	593	Upper Spine Acceleration,g	55	41	Left Upper Rib Acceleration,g	106	72	Left Center Rib Acceleration,g	94	75	Left Lower Rib Acceleration,g	111	89	Lower Spine Acceleration,g	58	72	Thoracic Trauma Index (TTI)	84	80	Pelvis Acceleration, g	83	115
	<u>DRIVER</u>	<u>PASSENGER</u>																												
Head Injury Criteria (HIC)	227	593																												
Upper Spine Acceleration,g	55	41																												
Left Upper Rib Acceleration,g	106	72																												
Left Center Rib Acceleration,g	94	75																												
Left Lower Rib Acceleration,g	111	89																												
Lower Spine Acceleration,g	58	72																												
Thoracic Trauma Index (TTI)	84	80																												
Pelvis Acceleration, g	83	115																												
17. Key Words BioSid Dummy Occupant Response Moving barrier Crash Testing		18. Distribution Statement Available from: National Technical Information Service Springfield, Virginia 22161																												
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages	22. Price																											



## TABLE OF CONTENTS

SECTION	TITLE	PAGE
1.0	PURPOSE AND TEST SUMMMARY	1-1
2.0	GENERAL TEST AND VEHICLE PARAMETER DATA	2-1
3.0	DATA REQUIRED BY R&D	3-1
APPENDIX A	PHOTOGRAPHS	A-1
APPENDIX B	DATA PLOT PRESENTATION	B-1
APPENDIX C	DUMMY CERTIFICATION	C-1



## LIST OF PHOTOGRAPHS

<u>DESCRIPTION</u>	<u>FIGURE</u>
PRE-TEST VEHICLE FRONT AND BARRIER VIEW	A-1
POST-TEST VEHICLE FRONT AND BARRIER VIEW	A-2
PRE-TEST VEHICLE RIGHT SIDE VIEW	A-3
POST-TEST VEHICLE RIGHT SIDE VIEW	A-4
PRE-TEST VEHICLE REAR AND BARRIER VIEW	A-5
POST-TEST VEHICLE REAR AND BARRIER VIEW	A-6
PRE-TEST VEHICLE LEFT AND BARRIER VIEW	A-7
PRE-TEST VEHICLE LEFT SIDE VIEW	A-8
PRE-TEST VEHICLE LEFT FRONT CLOSE-UP VIEW	A-9
POST-TEST VEHICLE LEFT FRONT CLOSE-UP VIEW	A-10
PRE-TEST VEHICLE LEFT REAR CLOSE-UP VIEW	A-11
POST-TEST VEHICLE LEFT REAR CLOSE-UP VIEW	A-12
PRE-TEST VEHICLE TOP - VIEW 1	A-13
PRE-TEST VEHICLE TOP - VIEW 2	A-14
POST-TEST VEHICLE TOP - VIEW 1	A-15
POST-TEST VEHICLE TOP - VIEW 2	A-16
PRE-TEST LEFT FRONT DOOR ACCELEROMETERS VIEW	A-17
PRE-TEST LEFT FRONT SILL ACCELEROMETER VIEW	A-18
PRE-TEST LEFT REAR DOOR ACCELEROMETERS VIEW	A-19
PRE-TEST LEFT REAR SILL ACCELEROMETER VIEW	A-20
PRE-TEST RIGHT FRONT SILL ACCELEROMETER VIEW	A-21
PRE-TEST RIGHT REAR SILL ACCELEROMETER VIEW	A-22
PRE-TEST TRUNK AREA ACCELEROMETER - VIEW 1	A-23
PRE-TEST TRUNK AREA ACCELEROMETER - VIEW 2	A-24
PRE-TEST DRIVER AND PASSENGER DUMMIES LEFT SIDE VIEW	A-25
POST-TEST DRIVER AND PASSENGER DUMMIES LEFT SIDE VIEW	A-26
PRE-TEST DRIVER AND PASSENGER DUMMIES RIGHT SIDE VIEW	A-27
POST-TEST DRIVER AND PASSENGER DUMMIES RIGHT SIDE VIEW	A-28
PRE-TEST DRIVER DUMMY - VIEW 1	A-29
PRE-TEST DRIVER DUMMY - VIEW 2	A-30
PRE-TEST DRIVER DUMMY - VIEW 3	A-31

LIST OF PHOTOGRAPHS, CONT'D.

<u>DESCRIPTION</u>	<u>FIGURE</u>
POST-TEST DRIVER DUMMY VIEW	A-32
PRE-TEST PASSENGER DUMMY VIEW	A-33
POST-TEST PASSENGER DUMMY VIEW	A-34
POST-TEST DRIVER DUMMY CONTACT VIEW	A-35
POST-TEST PASSENGER DUMMY CONTACT VIEW	A-36
POST-TEST BARRIER FACE - VIEW 1	A-37
POST-TEST BARRIER FACE - VIEW 2	A-38

SECTION 1.0  
PURPOSE AND TEST SUMMARY

PURPOSE

The purpose of this test was to evaluate the response of BioSid dummies in a moving deformable barrier into stationary vehicle side impact test. The vehicle was tested using conditions not currently contained in a Federal Motor Vehicle Safety Standard.

INTRODUCTION

A stationary 1988 Ford Taurus 4-door sedan was impacted on the left side by a Moving Deformable Barrier (MDB) on May 14, 1990. The test was to simulate an intersection collision with the striking vehicle travelling at 30 mph and the struck vehicle travelling at 15 mph. The orientation angle of the striking vehicle was 90° counterclockwise with respect to the longitudinal axis of the struck vehicle. The leading edge of contact was to be 37 inches forward of the midpoint of the wheelbase.

To simulate this collision, the MDB was to be towed into the stationary Ford Taurus at 33.5 mph with MDB's wheels crabbed clockwise to 26°. The actual test speed was 33.5 mph and the actual leading edge of contact was 36.5 inches forward of the midpoint of the Ford Taurus's wheelbase.

Section 2 contains General Test and Vehicle Parameter Data. Section 3 contains data required by R & D. Appendix A contains pre-test and post-test vehicle and dummy photographs. Appendix B contains Data Plots. Appendix C contains Dummy Certification Data.



SECTION 2.0

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Ford Motor Company

MAKE/MODEL: Ford Taurus

VIN: 1FABP50D0JG175545

BODY STYLE: 4-door sedan

MODEL YEAR: 1988

NHTSA NO.: NA

COLOR: BLUE

ENGINE DATA: TYPE: transverse CYLINDERS: 4 DISPLACEMENT: 2.5 liter

TRANSMISSION DATA: 3 SPEED,     MANUAL, X AUTOMATIC, X FWD,     RWD,     4WD

DATE VEHICLE RECEIVED: 5/07/90

ODOMETER READING: 45691

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	Yes
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	No
POWER SEATS	No	TILTING STEERING WHEEL	No
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	Yes	AIR CONDITIONING	Yes
RADIO	Yes	ANTI-SKID BRAKE	No
CLOCK	No	REAR WINDOW DEFROSTER	No
OTHER	None		

REMARKS:

1. IS THE VEHICLE STOCK THROUGHOUT? Yes
2. DOES VEHICLE SHOW EVIDENCE OF PRIOR ACCIDENT HISTORY? No
3. DOES VEHICLE SHOW ANY SIGNIFICANT CORROSION? No
4. CONDITION OF THE FRONT/REAR BUMPER AND FRAME: Good

DATA FROM VEHICLE'S CERTIFICATION LABEL:

VEHICLE MANUFACTURED BY: Ford Motor Company

DATE OF MANUFACTURE: 1/88

VIN: 1FABP50D0JG175545

GVWR: 4615 LBS

GAWR: FRONT: 2594 LBS., REAR: 2135 LBS.

TEST VEHICLE INFORMATION CONTINUED

VEHICLE TIRE DATA:

RECOMMENDED COLD TIRE PRESSURE: FRONT 35 psi; REAR 35 psi

TIRES ON VEHICLE (MFR. & LINE, SIZE): Goodyear/Invicta P205/70R14

BIAS PLY, BELTED, OR RADIAL: Radial

PLY RATING: 2

IS SPARE TIRE "SPACE SAVER"? No

IS SPARE TIRE STANDARD EQUIPMENT? Yes

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (WITH MAXIMUM FLUIDS):

RIGHT FRONT	947 LBS.	RIGHT REAR	575 LBS.
LEFT FRONT	959 LBS.	LEFT REAR	588 LBS.
TOTAL FRONT WEIGHT	1906 LBS.	(62.1% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1163 LBS.	(37.9% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT	3069 LBS.		

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF	27.0;	LF	26.9;	RR	24.4;	LR	24.2
PRE-TEST ATTITUDE:	RF	26.8;	LF	26.6;	RR	22.6;	LR	22.6
POST-TEST ATTITUDE:	RF	26.1;	LF	26.9;	RR	21.8;	LR	22.2

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 281 LBS. CARGO:

RIGHT FRONT	1046 LBS.	RIGHT REAR	777 LBS.
LEFT FRONT	1084 LBS.	LEFT REAR	791 LBS.
TOTAL FRONT WEIGHT	2130 LBS.	(57.6% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1568 LBS.	(42.4% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	3698 LBS.		

WEIGHT OF BALLAST SECURED IN VEHICLE TRUNK AREA: 50 LBS.

TEST VEHICLE INFORMATION CONTINUED

TEST FLUID TYPE

TEST FLUID TYPE: PURPLE STODDARD SOLVENT 2; SPEC. GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

"USABLE" CAPACITY\*: NA GALLONS

TEST VOLUME: 0 GALLONS

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): NA GALLONS

DETAILS OF FUEL SYSTEM: DNA

---

---

ELECTRIC FUEL PUMP: DNA

FUEL INJECTION: DNA

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT OPERATING? DNA

DATA FROM "RECOMMENDED TIRE PRESSURE" LABEL ON DOOR, POST, GLOVEBOX, ETC.:

RECOMMENDED COLD TIRE PRESSURE: FRONT 35 psi; REAR 35 psi

RECOMMENDED TIRE SIZE: P205/70R14 LOAD RANGE X B, C

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY): 2 FRONT

3 REAR

CARGO LOAD 150 LBS.

5 TOTAL

TOTAL 900 LBS.

\*WITH ENTIRE FUEL SYSTEM FILLED WITH FUEL TANK THROUGH CARBURETOR BOWL.

#### VEHICLE TEST WEIGHT CALCULATION

Test Weight = Unloaded Delivered Weight +  
(Number of Dummies X 165 lbs.) +  
Cargo Weight\*

To achieve test weight, the exhaust system, battery alternator, front and rear bumpers, radiator, master cylinder, distributor, valve covers and air cleaner were removed. The fuel tank was empty. The weight of the test vehicle was measured by placing each wheel on a KJ Law Force Plate.

\*A total test weight of 3690 pounds was used to duplicate a previous side impact test using a Ford Taurus.

TEST CONDITIONS

TEST NUMBER: 900514

DATE OF TEST: 5/14/90

TIME OF TEST: 1439

DRIVER DUMMY TEMPERATURE: 70° F

PASSENGER DUMMY TEMPERATURE: 72° F

AMBIENT TEMPERATURE AT IMPACT AREA: 70° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 69° F

MAX. LENGTH = 189.0

MAX. WIDTH = 71.8

TOP WIDTH = 44.0

WHEELBASE = 106.0

C.G. = 45.0 REARWARD OF FRONT WHEEL CENTERLINE

LEFT FRONT DOOR: UNLOCKED WINDOW: UP

LEFT REAR DOOR: UNLOCKED WINDOW: UP

RIGHT FRONT DOOR: UNLOCKED WINDOW: DOWN

RIGHT REAR DOOR: UNLOCKED WINDOW: DOWN

EMERGENCY BRAKE: ON

TRANSMISSION: NEUTRAL

STEERING COLUMN: NON-ADJUSTABLE

SEAT TRACKS: MID POSITION

SEAT BACK ANGLE: 23.5°

TYPES OF SEATS: FRONT - BUCKET; REAR - BENCH

TIRE PRESSURE: FRONT 35 psi; REAR 35 psi

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

TEST CONDITIONS, CONTINUED

SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE TEST WEIGHT (LBS.)	3698	3690
MDB TEST WEIGHT (LBS.)	2903	2900
MDB VELOCITY (MPH)*	33.5	33.5
IMPACT POINT (INCHES)**	36.5	37.0

DUMMY DATA

	<u>DRIVER</u>	<u>LEFT REAR PASSENGER</u>
TYPE:	BioSid	BioSid
SERIAL NO.:	001	002
INSTRUMENTATION:		
HEAD	3 accel.	3 accel
SHOULDER	1 accel., 3 force, & 1 displ.	1 accel. & 1 displ.
UPPER SPINE	4 accel.	3 accel.
LEFT UPPER THORAX RIB	2 accel. & 1 displ.	2 accel. & 1 displ.
LEFT CENTER THORAX RIB	2 accel. & 1 displ.	2 accel. & 1 displ.
LEFT LOWER THORAX RIB	2 accel. & 1 displ.	2 accel. & 1 displ.
LOWER SPINE	4 accel.	4 accel.
LEFT UPPER ABDOMEN	1 accel. & 1 displ.	1 accel. & 1 displ.
LEFT LOWER ABDOMEN	1 accel. & 1 displ.	1 accel. & 1 displ.
PELVIS	3 accel. & 3 force	3 accel.

RESTRAINT SYSTEM: Both dummies were unrestrained.

\*As measured over final one foot of travel.

\*\*As measured forward of the midpoint of the test vehicle's wheelbase.

POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #001	PASSENGER #002
HEAD	<u>Roof</u>	<u>Left C-pillar</u>
CHEST	<u>Left front door</u>	<u>Left rear door</u>
ABDOMEN	<u>Left front door</u>	<u>Left rear door</u>
LEFT KNEE	<u>Left front door</u>	<u>Left rear door</u>
RIGHT KNEE	<u>Left knee</u>	<u>Left knee</u>

DOOR OPENING:

	LEFT	RIGHT
FRONT	<u>*</u>	<u>Easy</u>
REAR	<u>*</u>	<u>Easy</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
FRONT	<u>NA</u>	<u>NA</u>
REAR	<u>NA</u>	<u>NA</u>

GLAZING DAMAGE:

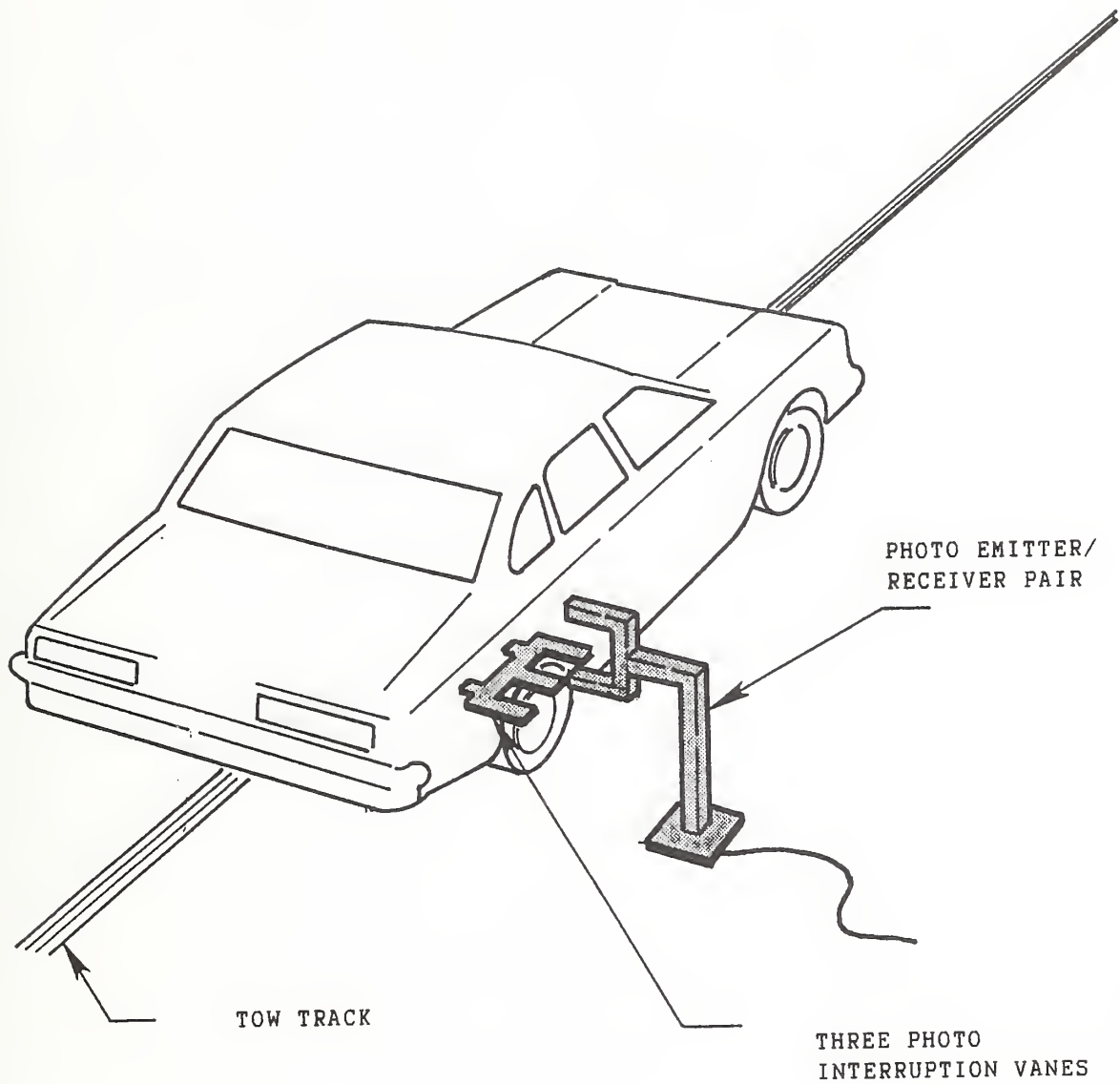
The left side windows were shattered. The windshield  
was cracked.

OTHER NOTABLE IMPACT EFFECTS:

None

\*The left front door to be opened later by VRTC.

# IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane clears emitter/receiver two inches before impact.

The vanes have one foot spacing.

### TEST ANOMALIES

The driver's left shoulder Y-axis accelerometer, SHLYG1, data was questionable at 161.2 and 238.2 milliseconds.

The driver's left shoulder Y-axis velocity, SHLYV1, data was affected by the above anomalies.

The left rear passenger's left shoulder Y-axis accelerometer, SHLYG4, data was questionable at 48.8 and 161.2 milliseconds.

The left rear passenger's left shoulder Y-axis velocity, SHLYV4, data was affected by the above anomalies.

## SECTION 3.0

### DATA REQUIRED BY R&D

The following pages are included in this section:

1. Dummy temperature control and positioning data
2. Dummy kinematic summary
3. Vehicle crush data
4. Dummy and vehicle accelerometer location and data summary
5. High speed camera information
6. Transducer information

## DUMMY TEMPERATURE CONTROL AND POSITIONING

The vehicle was kept inside the temperature controlled crash test building until approximately 2 hours prior to the test. Temperature inside the vehicle and ambient temperature at the crash area were recorded. Dummy temperature while outside the crash test building was maintained by portable air conditioning units until approximately 1 minute prior to the test.

The following Side Impact Dummy Seating Procedure summarizes the steps taken to position the instrumented, calibrated dummies in the test vehicle.

## SIDE IMPACT DUMMY SEATING PROCEDURE

### 1. Seat Positioning

- A. Place seat at the longitudinal midpoint of fore to aft adjustment (forward most locking position to rear most locking position). If no locking position is available at mid-travel, use the position immediately rearward of mid-travel.
- B. If the seat back angle is adjustable, place it in the manufacturer's stated nominal design location. If not specified, set it at the first detent rearward of 25°.
- C. Adjustable head restraints are set so that the top surface of the restraint is level with the cg of the dummy's head.
- D. If the seat is equipped with adjustable side or lumbar supports, they are set in their "released" or full back positions.
- E. All other seat adjustments are positioned to their mid-travel locations. If locking positions are not available at these mid-points, use the position immediately rearward, down, left or clockwise of mid-travel. Clockwise is defined looking rear to front or left to right relative to the vehicle. This also applies to adjustable steering columns.

### 2. H-point Determination

- A. The SAE three-dimensional H-point machine (SAE J826 APR80 - 50th percentile male configuration) is used to locate the H-point for each surrogate.
- B. The H-point machine is positioned on the seat as follows:
  - 1. Bucket or Contoured Seats - The H-point machine is centered on the bucket or contour such that its midsagittal plane is vertical and longitudinal.

## 2. Bench Seats

- a. driver position - The H-point machine is positioned such that its midsagittal plane is vertical, longitudinal, and contains the steering wheel center point.
- b. outboard passenger positions - The H-point machine is positioned such that its midsagittal plane is vertical, longitudinal, and the same distance from the longitudinal vehicle centerline as that for the driver position.
- c. center passenger positions - The H-point machine is positioned such that its midsagittal plane is vertical and contains the longitudinal vehicle centerline.

C. Locate the H-point position using the steps outlined in sections 4 through 6 of SAE Standard J826 APR80, unless otherwise specified in section 1 or 2 of this document. Record the coordinates of this point, relative to the vehicle, for use in sections 4 and 5 of this document.

## 3. Test Dummies

- A. This side impact crash test uses the BioSid side impact dummy.
- B. The arm position is fully down and the end of the arm is 1/4" away from the left side of the dummy.
- C. All dummy joints are inspected for mobility prior to each test usage and reset to hold between 1 and 2 g's. This amount just barely restrains the weight of the individual limb when it is extended horizontally.
- D. Each test dummy is clothed in form-fitting cotton stretch underwear with short sleeves and mid-calf length pants. Each foot of the dummy is equipped with a size 11EE shoe which meets the configuration, size, sole, and heel thickness specifications of MIL-S-13192 and weighs  $1.25 \pm 0.2$  pounds. All the above items are supplied by the contractor.

#### 4. Initial Dummy Placement

The BioSid dummy(s) is placed in the vehicle seat with its pelvis positioned such that a lateral line passing through the dummy H-point is perpendicular to the longitudinal centerplane of the vehicle.

A. Bucket or Contoured Seats. The dummy is centered on the bucket or contoured seat such that its midsagittal plane is vertical and longitudinal. The legs are positioned as follows, keeping the femur and tibia centerlines in a plane that is as near to vertical as possible.

1. driver position placement - The right foot of the dummy is initially placed on the undepressed accelerator pedal, with the heel resting on the floorpan as far forward as possible. The knees of the dummy are initially set 8 1/2 inches apart, measured between the center surfaces of the knee.
2. passenger position placement - The knees of the dummy are initially set 8 1/2 inches apart, measured between the center surfaces of the knee. If a center tunnel prevents this, place the feet on either side of the tunnel.
3. center passenger position - The dummy is positioned in the seat as outlined in section 4.A.2 except that its midsagittal plane is vertical and contains the vehicle centerline.

#### 5. Initial Dummy Positioning

A. H-Point Positioning

1. Determine the dummy's H-point target location which is the point .25-inch below the H-point position determined by using the SAE J826 APR80 manikin in section 2.0.
2. With the dummy laterally positioned as in section 4, insert the pelvis angle indicator bar in the hole provided above, and to the

rear of the dummy H-point. Position the longitudinal pelvis angle between 23° and 25° to the horizontal. This may be accomplished by raising the legs or flexing the upper torso forward and allowing the pelvis to rotate. The lateral pelvis angle is to be horizontal.

3. Apply sufficient force on the lower torso in a horizontal and vertical direction to place the dummy H-point at the coordinates obtained in section 5.A.1.
4. If the H-point cannot be placed at the desired coordinates, adjust the pelvis angle within the 2° band and reposition to the coordinates. After repositioning the H-point, any deviation from the desired coordinates is recorded and used to indicate actual H-point locations. This deviation is not to exceed 1/2".

#### 6. Final Dummy Positioning

- A. Driver Position. Without inducing pelvis or torso movement, the dummy's right foot is maintained on the undepressed accelerator pedal with the heel resting as far forward as possible on the floorpan. The left foot is set perpendicular to the lower leg with the heel resting on the floorpan in the same lateral line as the right heel. If possible within these constraints, the dummy's thighs should be in contact with the seatpan.
- B. Front Passenger Positions. Without inducing pelvis or torso movement, place the dummy's feet on the vehicle's toeboard with the heels resting on the floorpan as close as possible to the intersection of the toeboard and floorpan. If the feet cannot be placed on the toeboard, they are set perpendicular to the lower legs and placed as far forward as possible such that the heels rest on the floorpan.
- C. Rear Passenger Positions. Without inducing pelvis or torso movement, the feet are placed flat on the floorpan and beneath the front seat as far forward as possible without front seat interference. If necessary, change the distance between the knees as required to place the feet beneath the seat. Record the new distance.

- D. Vehicles with wheelhouse projections in the passenger compartment. The foot (feet) in question is placed in the wheel of the floorpan/toeboard and not on the wheelhouse projection. This is done by twisting the foot at the ankle, maintaining the upper and lower leg positions outlined in section 4. If this does not resolve the situation, move the leg of the foot in question just enough to achieve the correct position, keeping the femur and tibia centerlines in a plane that is as near to vertical as possible. Record the new distance between the knees.
- E. The knee positions are to be as outlined in section 4, unless modified as in section 6. The plane containing the femur and tibia centerlines for each leg is to be as near to vertical as possible without inducing pelvis or torso movement. Record the distance between the knees for each dummy.
- F. Prior to conducting the test, the dummy position is visually checked. The dummy is to be properly positioned laterally with its midsagittal plane vertical and longitudinal, and the upper torso resting against the seat back. The H-point and pelvis angle are to be within the specified ranges and the foot, knee, and leg placements are to be as outlined. The COTR is to be satisfied with the final dummy position and any deviations from this procedure are to be approved by the COTR.
- G. The final dummy position is recorded. These measurements are to include, but not be limited to, pelvis and head angles as well as actual H-point and head cg locations relative to the vehicle. The straight-line distance from the H-point to the center of the outer ankle bolt is also recorded for one of the legs (eg. left H-point to left ankle bolt).

# DUMMY IN-VEHICLE POSITION RECORDING SHEET

MFR./MAKE/MODEL: Ford Motor Company/Taurus

SEAT TYPE: Bench

X Bucket

Split bench

ADJUSTER TYPE: X Manual

Power

Non-adjustable

## TECHNICIANS:

BUCKET SEAT BACK TYPE: Non-adjustable

X Adjustable reclining

POSITIONING DATE: 5/14/90

AMBIENT TEMP.: 65° F TIME: 1439

1. B. Miller

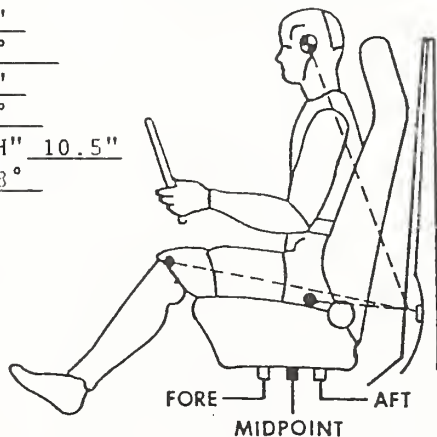
2. R. Cribley

3. P. Cummins

4.

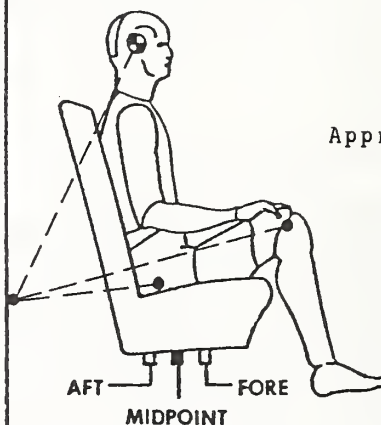
DRIVER DUMMY\* # 001 TYPE: BioSid

Head 19.1"  
Target 2°  
Knee 23.3"  
Joint 100°  
Approx. "H" 10.5"  
Point 143°



PASSENGER DUMMY\*\* # 002 TYPE: BioSid

Head 12.1"  
Target 28°  
Knee 28.8"  
Joint 106°  
Approx. "H" 17.4"  
Point 142°

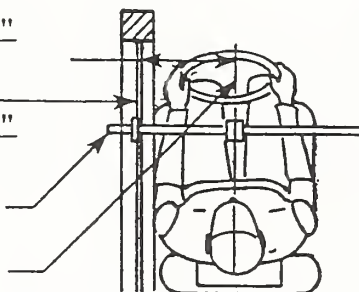


13.0"

DOOR GLASS  
HEIGHT = 10.2"

LATERAL BAR

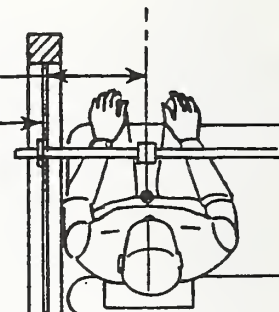
ADJUSTABLE  
POINTER



DRIVER DUMMY

12.2"

DOOR GLASS  
HEIGHT = 10.2"

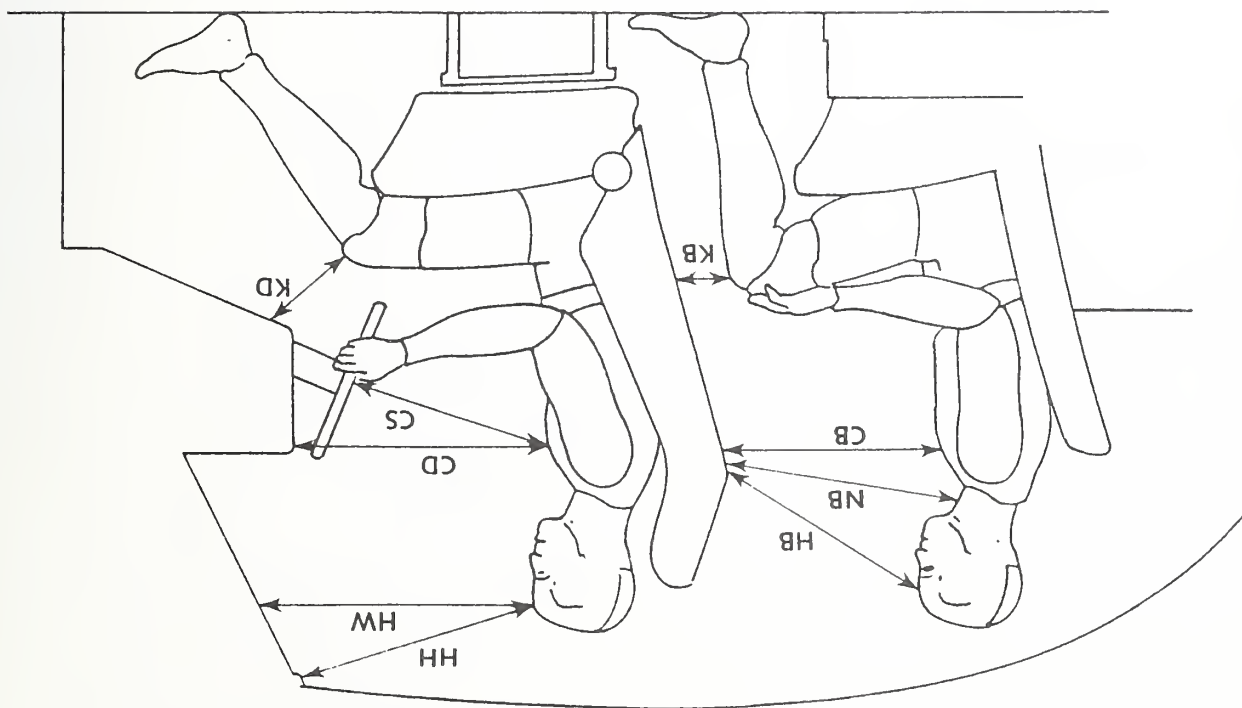


PASSENGER DUMMY

\*Driver dummy measurements are referenced to top of left front door striker bolt and all angles referenced to vertical.

\*\*Passenger dummy measurements are referenced to top of left rear door striker bolt and all angles are referenced to vertical.

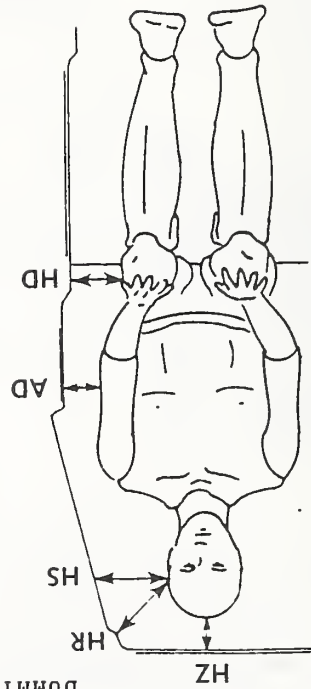
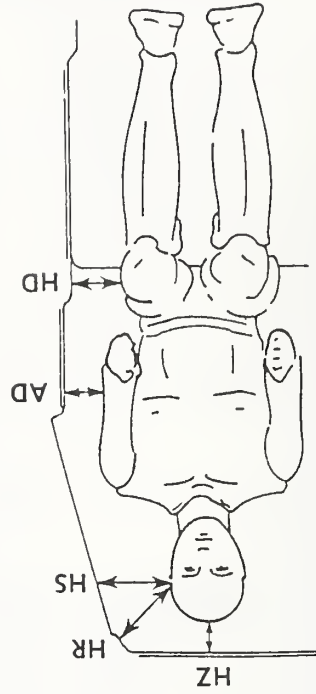
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS



REAR  
DRIVER PASSENGER

HH	15.4	NA
HW	21.6	NA
CD	21.9	NA
CS	13.0	NA
KDL	5.4	NA
KDR	4.6	NA
HB	26.8	NA
NB	25.8	NA
CB	20.4	NA
KBL	6.6	NA
KBR	6.1	NA

ALL MEASUREMENTS ARE IN INCHES.



DUMMY LATERAL CLEARANCE DIMENSIONS

ALL DISTANCE MEASUREMENTS ARE  
IN INCHES.

HZ	4.0	2.0
HD	8.4	7.1
AD	4.8	4.4
HS	9.9	7.0
HR	6.2	5.8

DRIVER PASSENGER

# SAE 3D H-POINT MACHINE LOCATION AND DUMMY LOCATION DATA

	DRIVER #001	PASSENGER #002
SAE 3D H-POINT MACHINE LOCATION:	X = 6.0	X = 11.2
	Z = -12.2	Z = -19.5
DUMMY H-POINT LOCATION:	X = 6.0	X = 11.0
	Z = -12.1	Z = -19.3
DUMMY PELVIC ANGLE:	24°	25°

\*The driver location measurements referenced to the left front door striker bolt and the passenger location measurements referenced to the left rear door striker bolt in two-dimensional rectangular coordinates: +X = forward, +Z = upward

All dimensions in inches except as noted.

All angles referenced to horizontal, positive is upward.

## DUMMY KINEMATIC SUMMARY

### DRIVER

During impact, the dummy's torso contacted the driver's door and the head contacted the roof. The dummy rebounded laterally across the front occupant compartment. The upper torso rotated and the upper back contacted the right front window sill. The left knee contacted the left front door and the right knee contacted the left knee. The dummy came to rest leaning against the right front seat.

### PASSENGER

During impact, the dummy's torso contacted the left rear door and the head contacted the left C-pillar. The left knee contacted the left rear door and the right knee contacted the left knee. The dummy rebounded laterally across the rear occupant compartment. The dummy came to rest seated upright in the right rear seat.

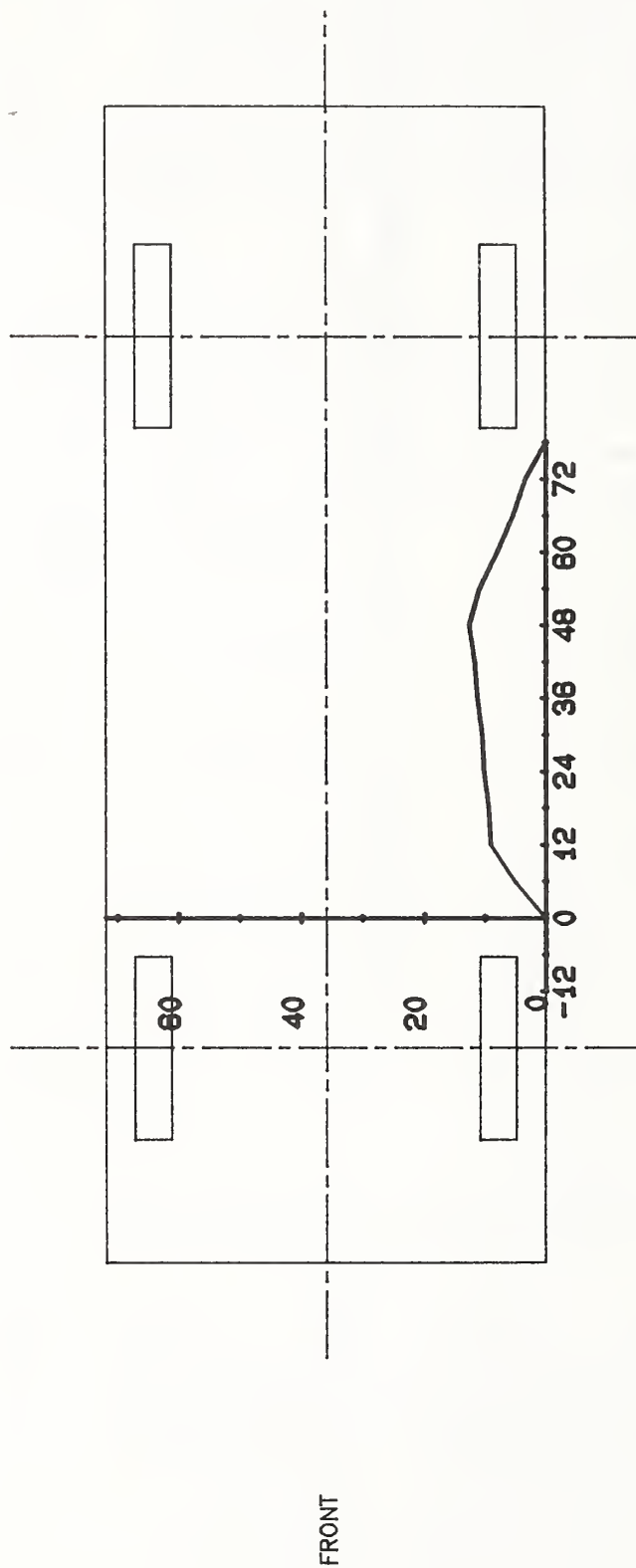
VEHICLE EXTERIOR PROFILES AND STATIC CRUSH  
ZERO DISTANCE AT PROJECTED IMPACT POINT\*

LOCATION	HEIGHT (IN)	-6	0	6	12	18	24	30	36	42	48	54	60	66	72	78
PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)																
Axle Height	11.5	X	X	15.1	14.9	14.9	14.8	14.9	14.8	14.9	14.9	15.2	14.9	15.1	15.2	X
H-Point	20.5	X	12.5	12.2	12.1	12.1	11.9	11.9	11.9	11.8	11.9	12.1	12.1	12.2	12.4	12.3
Mid Door	25.0	12.6	12.9	12.6	12.5	12.4	12.2	12.2	12.1	12.2	12.2	12.3	12.4	12.4	12.5	12.7
Window Sill	35.8	16.5	16.1	15.5	15.2	15.2	15.2	15.2	15.1	14.9	14.8	14.9	14.8	14.9	14.9	14.9
Window Top	53.0	X	X	X	X	X	X	25.0	24.8	24.6	24.7	24.9	24.8	24.8	24.9	24.9
POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)																
Axle Height	11.5	X	X	20.1	23.9	24.3	24.9	25.3	26.0	26.6	27.4	26.0	22.8	20.4	18.5	X
H-Point	20.5	X	17.2	23.8	25.7	26.9	27.5	28.0	28.6	29.2	29.6	30.1	30.4	30.6	26.6	16.0
Mid Door	25.0	15.6	16.8	22.5	24.9	25.6	26.1	27.1	27.6	27.2	28.5	28.5	28.6	29.1	26.9	21.1
Window Sill	35.8	18.5	18.2	20.4	20.9	22.4	23.5	24.4	25.1	25.9	26.9	27.2	27.7	28.2	25.2	20.8
Window Top	53.0	X	X	X	X	X	X	26.2	26.4	26.7	27.1	27.9	26.6	25.3	24.0	27.5
STATIC CRUSH (IN)																
Axle Height	11.5	X	X	5.1	9.0	9.4	10.1	10.4	11.2	11.7	12.5	10.8	7.9	5.3	3.3	X
H-Point	20.5	X	4.7	11.6	13.6	14.8	15.6	16.1	16.7	17.4	17.7	18.0	18.3	18.4	14.2	3.7
Mid Door	25.0	3.0	3.9	9.9	12.4	13.2	13.9	14.9	15.5	15.0	16.3	16.2	16.2	16.7	14.4	8.4
Window Sill	35.8	2.0	2.1	4.9	5.7	7.2	8.3	9.2	10.0	11.0	12.1	12.3	12.9	13.3	10.3	5.9
Window Top	53.0	X	X	X	X	X	X	1.2	1.6	2.1	2.4	3.0	1.8	0.5	-0.9	2.6

\* Projected impact point is 37 inches forward of driver's side wheelbase midpoint. Column readings are front to rear from left to right.

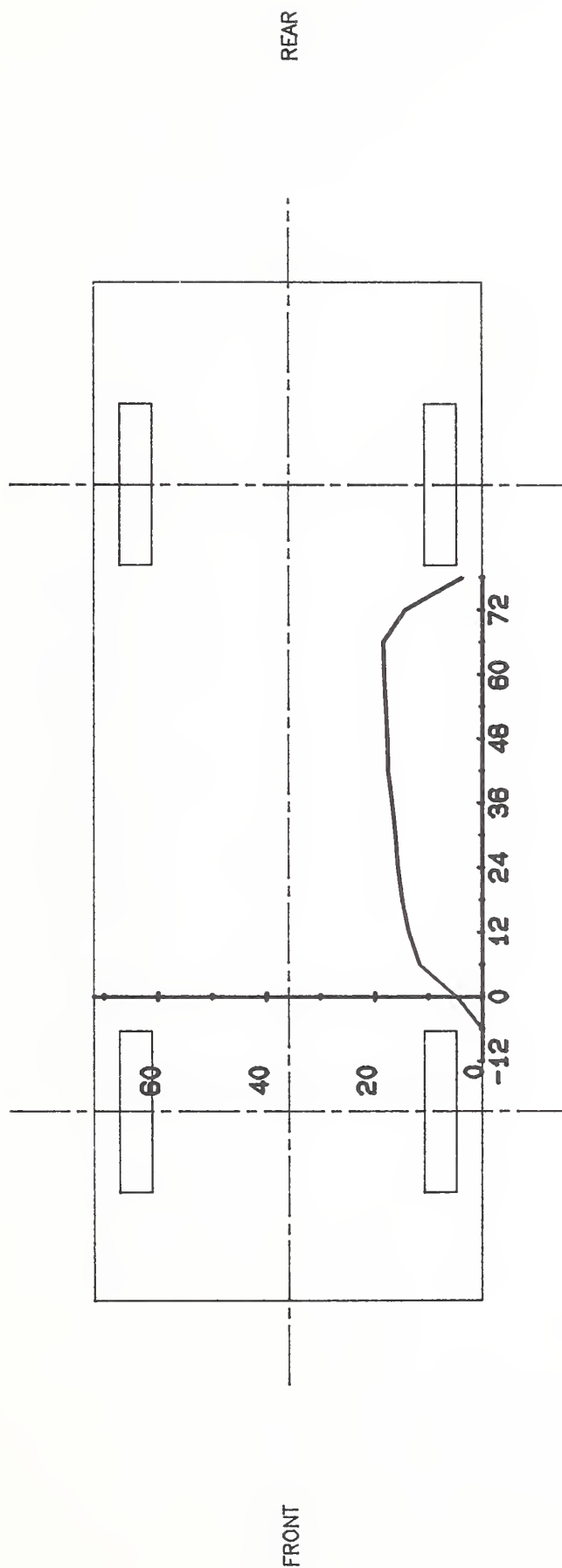
\*\* Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

# VEHICLE EXTERIOR STATIC CRUSH PROFILE



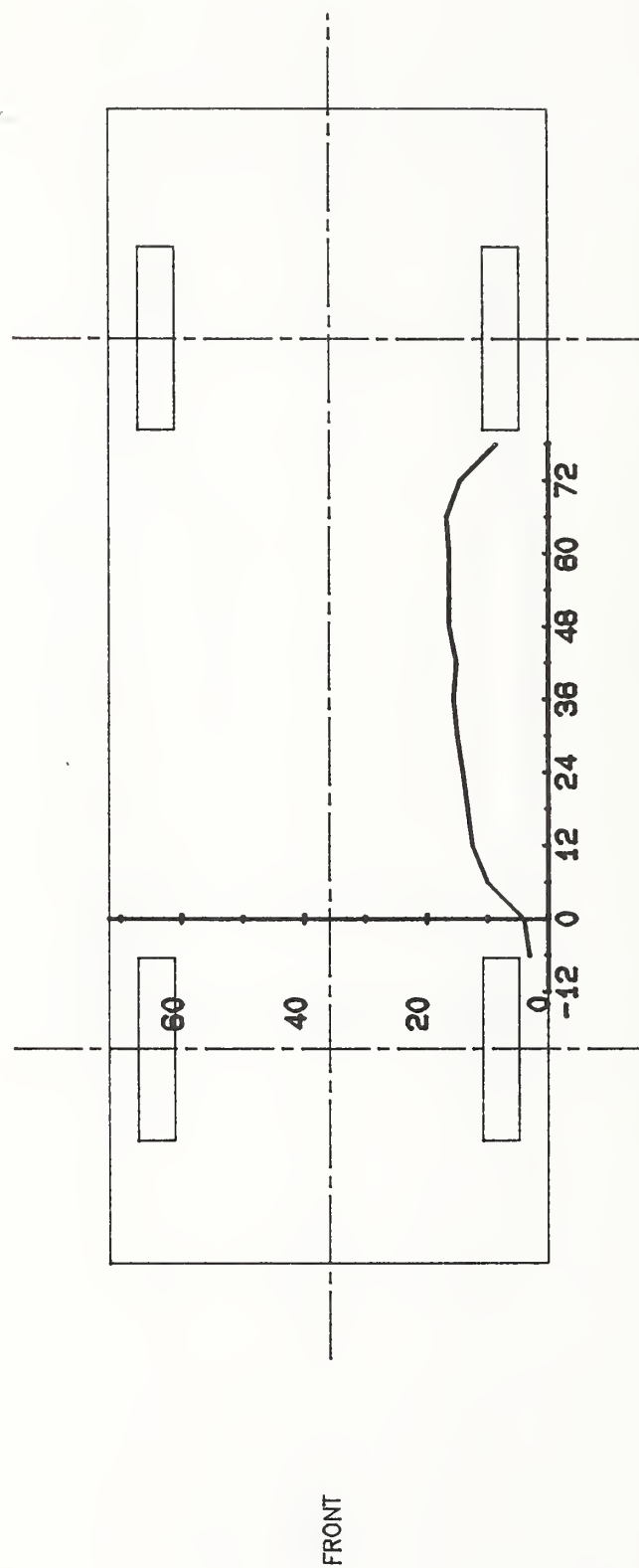
PROFILE LEVEL EQUALS AXLE HEIGHT WHICH IS 11.5" ABOVE GROUND LEVEL  
 (0,0) EQUALS PROJECTED IMPACT POINT  
 SCALE FACTOR EQUALS 0.032

# VEHICLE EXTERIOR STATIC CRUSH PROFILE



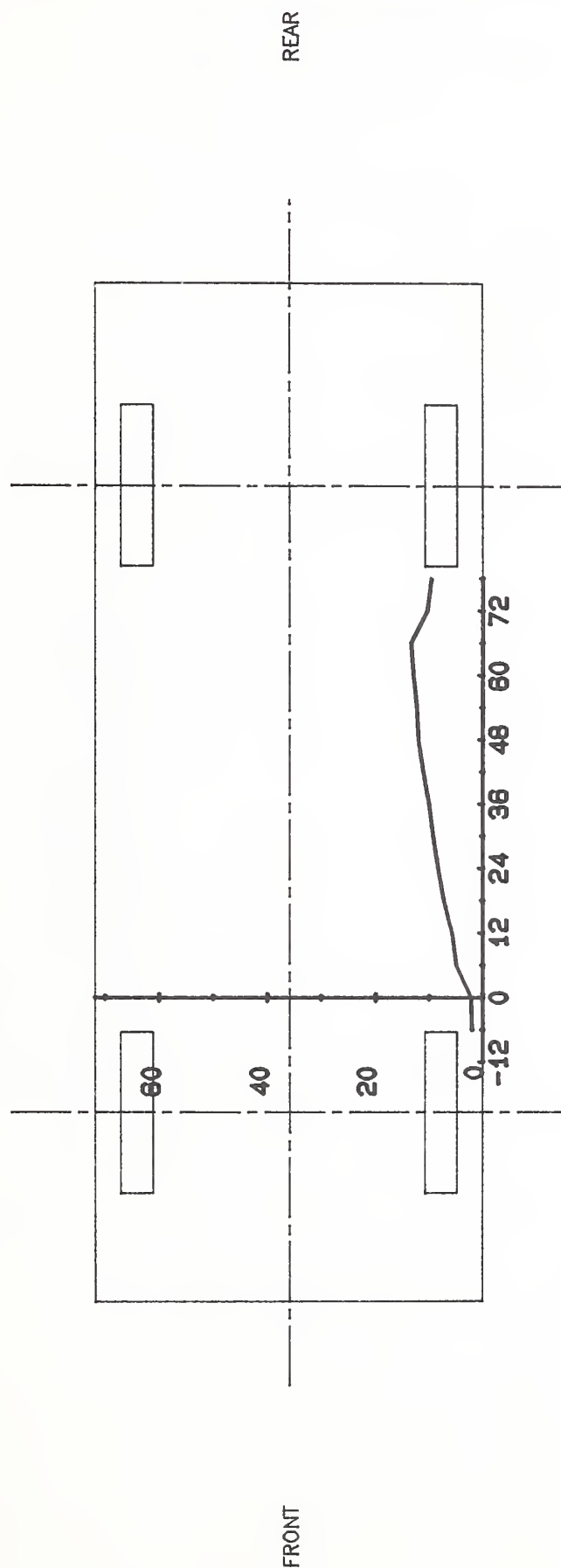
PROFILE LEVEL EQUALS H-POINT HEIGHT WHICH IS 20.5" ABOVE GROUND LEVEL  
 (0,0) EQUALS PROJECTED IMPACT POINT  
 SCALE FACTOR EQUALS 0.032

# VEHICLE EXTERIOR STATIC CRUSH PROFILE



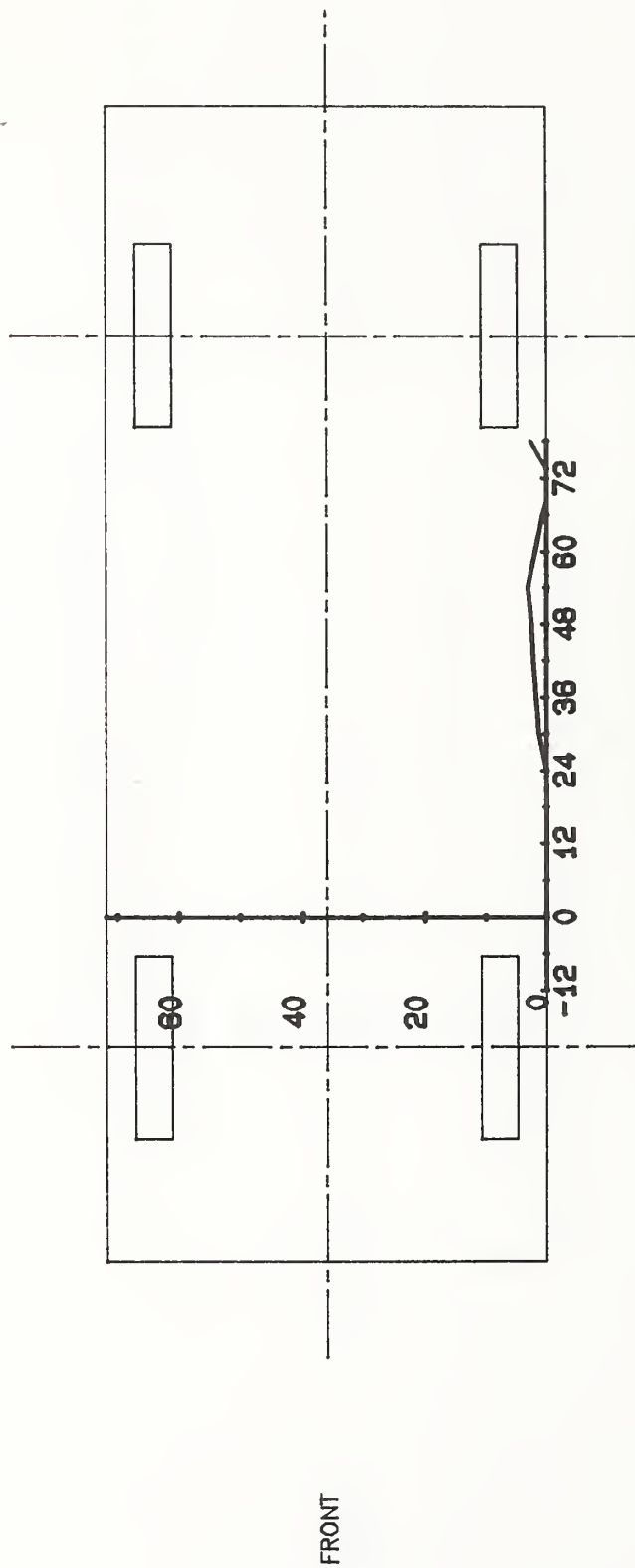
PROFILE LEVEL EQUALS MID DOOR HEIGHT WHICH IS 25.0" ABOVE GROUND LEVEL  
 (0,0) EQUALS PROJECTED IMPACT POINT  
 SCALE FACTOR EQUALS 0.032

# VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW SILL HEIGHT WHICH IS 35.8" ABOVE GROUND LEVEL  
 (0,0) EQUALS PROJECTED IMPACT POINT  
 SCALE FACTOR EQUALS 0.032

# VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW TOP HEIGHT WHICH IS 53.0" ABOVE GROUND LEVEL  
 (0,0) EQUALS PROJECTED IMPACT POINT  
 SCALE FACTOR EQUALS 0.032

# DUMMY DATA SUMMARY

TEST NUMBER 900514

## DRIVER DUMMY

SN: 001

POSITIVE DIRECTION		NEGATIVE DIRECTION	
MAX	MSEC	MAX	MSEC

HEAD				
LONGITUDINAL ACCEL. (g)	9.7	231.4	14.1	293.3
LATERAL ACCEL. (g)	24.3	78.4	10.6	231.0
DELTA V (MPH)	23.0	128.1		
VERTICAL ACCEL. (g)	21.1	258.1	53.4	53.3
RESULTANT ACCEL. (g)	56.9	53.3		
HIC	227.0 FROM 44.5 TO 80.5 MSEC			

LEFT SHOULDER				
LATERAL ACCEL. (g)	131.6	27.5	γ 63.4	33.7 γ
DELTA V (MPH)	12.4	31.0	γ	
LONGITUDINAL FORCE (N)	218.7	260.4	230.7	40.0
LATERAL FORCE (N)	4594.9	47.5	3537.0	266.9
VERTICAL FORCE (N)	509.0	240.9	2507.1	276.0
LATERAL DISPL. (mm)	54.4	47.8	0.7	278.6

UPPER SPINE				
LONGITUDINAL ACCEL. (g)	10.1	280.0	4.4	68.1
LATERAL (P) ACCEL. (g)	55.0	45.0	25.6	265.0
DELTA V (MPH)	25.1	58.8		
LATERAL (R) ACCEL. (g)	55.6	45.0	26.3	265.0
DELTA V (MPH)	25.7	58.8		
VERTICAL ACCEL. (g)	8.5	244.4	4.8	73.8
RESULTANT (P) ACCEL. (g)	55.1	45.0		
RESULTANT (R) ACCEL. (g)	55.8	45.0		

LEFT UPPER THORAX RIB				
LATERAL (P) ACCEL. (g)	105.9	40.0	59.3	272.5
DELTA V (MPH)	10.4	31.8		
LATERAL (R) ACCEL. (g)	101.8	40.0	59.6	271.9
DELTA V (MPH)	10.6	31.8		
LATERAL DISPL. (mm)	41.4	47.4	0.0	18.0

## DUMMY DATA SUMMARY CONTINUED

TEST NUMBER 900514

## DRIVER DUMMY

SN: 001

 POSITIVE  
 DIRECTION  
 MAX MSEC

 NEGATIVE  
 DIRECTION  
 MAX MSEC

## LEFT CENTER THORAX RIB

LATERAL (P) ACCEL. (g)	93.9	38.8	72.1	272.5
DELTA V (MPH)	10.7	30.6		
LATERAL (R) ACCEL. (g)	92.2	26.3	71.0	272.5
DELTA V (MPH)	11.0	30.6		
LATERAL DISPL. (mm)	39.8	47.3	0.1	68.9

## LEFT LOWER THORAX RIB

LATERAL (P) ACCEL. (g)	111.3	26.3	86.1	273.1
DELTA V (MPH)	11.5	30.0		
LATERAL (R) ACCEL. (g)	112.5	26.3	84.9	273.1
DELTA V (MPH)	11.8	30.0		
LATERAL DISPL. (mm)	38.3	46.6	0.0	18.1

## THORACIC TRAUMA INDEX

TTI (P)	84.4
TTI (R)	84.9

## LOWER SPINE

LONGITUDINAL ACCEL. (g)	12.3	268.1	9.4	48.8
LATERAL (P) ACCEL. (g)	57.5	38.8	11.2	258.8
DELTA V (MPH)	26.4	58.8		
LATERAL (R) ACCEL. (g)	57.4	38.8	11.6	262.5
DELTA V (MPH)	26.1	58.8		
VERTICAL ACCEL. (g)	14.5	38.1	4.7	50.6
RESULTANT (P) ACCEL. (g)	60.0	38.1		
RESULTANT (R) ACCEL. (g)	59.9	38.1		

## LEFT UPPER ABDOMEN

LATERAL ACCEL. (g)	80.5	35.6	21.2	30.6
DELTA V (MPH)	12.6	29.4		
LATERAL DISPL. (mm)	51.3	42.6	0.0	16.5

## LEFT LOWER ABDOMEN

LATERAL ACCEL. (g)	86.6	21.9	22.0	30.6
DELTA V (MPH)	13.7	28.8		
LATERAL DISPL. (mm)	59.6	43.9	0.1	67.8

# DUMMY DATA SUMMARY CONTINUED

TEST NUMBER 900514

DRIVER DUMMY

SN: 001

	POSITIVE DIRECTION		NEGATIVE DIRECTION	
	MAX	MSEC	MAX	MSEC
<hr/>				
PELVIS				
LONGITUDINAL ACCEL. (g)	9.8	47.5	18.0	40.6
LATERAL ACCEL. (g)	82.6	34.4	10.5	227.5
DELTA V (MPH)	25.1	46.2		
VERTICAL ACCEL. (g)	12.1	246.9	4.3	90.0
RESULTANT ACCEL. (g)	83.1	34.4		
<hr/>				
PELVIS PUBIC SYMPHYSIS				
LATERAL FORCE (N)	3407.6	39.5	155.4	117.9
<hr/>				
PELVIS SACRUM				
LATERAL FORCE (N)	845.0	87.4	4693.5	36.3
<hr/>				
PELVIS ILIAC				
LATERAL FORCE (N)	2058.7	38.6	210.1	55.8
<hr/>				

## POSITIVE DIRECTION

LONGITUDINAL: FORWARD  
 LATERAL: RIGHTWARD  
 VERTICAL: UPWARD  
 FORCE: COMPRESSION

## NEGATIVE DIRECTION

LONGITUDINAL: REARWARD  
 LATERAL: LEFTWARD  
 VERTICAL: DOWNWARD  
 FORCE: EXTENSION

## NOTES:

For dummy channels Delta V is the velocity change at the approximate time of separation from the contact area.

(P) Primary Sensor  
 (R) Redundant Sensor

Y See TEST ANOMALIES

# DUMMY DATA SUMMARY

TEST NUMBER 900514

## PASSENGER DUMMY

SN: 002

	POSITIVE DIRECTION		NEGATIVE DIRECTION	
	MAX	MSEC	MAX	MSEC

### HEAD

LONGITUDINAL ACCEL. (g)	8.8	116.9	34.0	65.3
LATERAL ACCEL. (g)	120.3	64.8	13.8	172.4
DELTA V (MPH)	19.2	78.2		
VERTICAL ACCEL. (g)	17.7	43.0	24.2	60.4
RESULTANT ACCEL. (g)	125.0	64.8		
HIC	592.7 FROM 62.2 TO 68.0 MSEC			

### LEFT SHOULDER

LATERAL ACCEL. (g)	83.8	43.8 Y	20.3	162.5 Y
DELTA V (MPH)	13.1	47.8 Y		
LATERAL DISPL. (mm)	13.7	55.1	0.4	32.6

### UPPER SPINE

LONGITUDINAL ACCEL. (g)	4.9	87.5	23.2	51.9
LATERAL (P) ACCEL. (g)	41.2	46.3	3.0	133.1
DELTA V (MPH)	18.2	68.1		
VERTICAL ACCEL. (g)	4.5	34.4	7.2	48.1
RESULTANT (P) ACCEL. (g)	47.0	52.5		

### LEFT UPPER THORAX RIB

LATERAL (P) ACCEL. (g)	72.0	43.1	6.2	70.0
DELTA V (MPH)	22.3	65.6		
LATERAL (R) ACCEL. (g)	71.6	43.8	4.3	70.6
DELTA V (MPH)	22.0	66.2		
LATERAL DISPL. (mm)	14.8	53.5	0.1	340.0

### LEFT CENTER THORAX RIB

LATERAL (P) ACCEL. (g)	74.6	41.9	4.0	128.8
DELTA V (MPH)	18.2	52.5		
LATERAL (R) ACCEL. (g)	73.5	41.9	4.0	100.6
DELTA V (MPH)	18.2	53.1		
LATERAL DISPL. (mm)	17.3	50.9	0.4	116.6

### LEFT LOWER THORAX RIB

LATERAL (P) ACCEL. (g)	88.7	40.6	5.2	76.9
DELTA V (MPH)	19.8	53.1		
LATERAL (R) ACCEL. (g)	89.6	40.6	5.9	76.3
DELTA V (MPH)	20.1	53.8		
LATERAL DISPL. (mm)	20.0	49.9	0.7	87.9

### THORACIC TRAUMA INDEX

TTI (P)	80.5
TTI (R)	81.0

# DUMMY DATA SUMMARY CONTINUED

TEST NUMBER 900514

## PASSENGER DUMMY

SN: 002

	POSITIVE DIRECTION		NEGATIVE DIRECTION	
	MAX	MSEC	MAX	MSEC
<b>LOWER SPINE</b>				
LONGITUDINAL ACCEL. (g)	10.4	53.1	22.4	41.9
LATERAL (P) ACCEL. (g)	72.0	40.6	7.7	75.6
DELTA V (MPH)	21.4	56.9		
LATERAL (R) ACCEL. (g)	72.0	40.6	7.7	75.6
DELTA V (MPH)	21.6	56.9		
VERTICAL ACCEL. (g)	44.6	41.2	12.1	78.8
RESULTANT (P) ACCEL. (g)	87.1	41.2		
RESULTANT (R) ACCEL. (g)	87.5	41.2		
<b>LEFT UPPER ABDOMEN</b>				
LATERAL ACCEL. (g)	65.8	27.5	12.0	61.2
DELTA V (MPH)	22.1	53.8		
LATERAL DISPL. (mm)	35.9	44.5	0.1	24.1
<b>LEFT LOWER ABDOMEN</b>				
LATERAL ACCEL. (g)	83.2	26.9	13.6	21.9
DELTA V (MPH)	22.0	55.6		
LATERAL DISPL. (mm)	35.6	43.1	0.1	160.5
<b>PELVIS</b>				
LONGITUDINAL ACCEL. (g)	8.3	59.4	34.5	36.3
LATERAL ACCEL. (g)	115.2	33.1	5.6	99.4
DELTA V (MPH)	23.4	41.9		
VERTICAL ACCEL. (g)	31.5	37.5	6.5	83.1
RESULTANT ACCEL. (g)	118.7	33.7		

### POSITIVE DIRECTION

LONGITUDINAL: FORWARD  
 LATERAL: RIGHTWARD  
 VERTICAL: UPWARD  
 FORCE: COMPRESSION

### NEGATIVE DIRECTION

LONGITUDINAL: REARWARD  
 LATERAL: LEFTWARD  
 VERTICAL: DOWNWARD  
 FORCE: EXTENSION

### NOTES:

For dummy channels Delta V is the velocity change at the approximate time of separation from the contact area.

(P) Primary Sensor

(R) Redundant Sensor

γ See TEST ANOMALIES

# VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 900514

No.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX G	MSEC	MAX G	MSEC
1	RIGHT SILL AT FRONT SEAT	116.5	27.5	12.1				
	LONGITUDINAL				2.6	53.4	5.9	12.1
	LATERAL				21.9	11.9	2.6	204.0
	VERTICAL				4.3	11.0	3.7	94.5
	RESULTANT				23.0	11.9		
	Delta VY is 11.0 MPH @ 66.0 MSEC							
2	RIGHT SILL AT REAR SEAT	82.5	27.5	11.8				
	LONGITUDINAL				5.2	11.6	4.1	52.9
	LATERAL				19.3	12.1	2.2	240.6
	VERTICAL				5.5	62.3	4.9	36.5
	RESULTANT				20.0	12.1		
	Delta VY is 13.4 MPH @ 83.2 MSEC							
3	REAR DECK OVER AXLE	47.8	0.0	16.6				
	LONGITUDINAL				3.7	35.3	8.1	26.1
	LATERAL				19.2	42.3	2.9	216.5
	VERTICAL				12.7	40.8	12.6	48.4
	RESULTANT				22.4	41.5		
	Delta VY is 15.9 MPH @ 102.8 MSEC							
4	LEFT SILL AT REAR SEAT	83.0	-27.5	12.1				
	LATERAL				95.6	12.9	92.1	19.9
	Delta VY is 16.7 MPH @ 13.6 MSEC							
5	LEFT SILL AT FRONT SEAT	116.3	-27.5	12.4				
	LATERAL				96.6	9.3	69.4	21.4
	Delta VY is 18.9 MPH @ 15.9 MSEC							
6	LEFT FRONT DOOR CENTERLINE	114.1	-29.4	30.8				
	LATERAL				56.5	14.0	100.7	31.6
	Delta VY is 20.4 MPH @ 25.1 MSEC							
7	RIGHT TRUNK FLOOR	47.9	14.5	16.6				
	LONGITUDINAL				3.4	52.1	6.3	26.9
8	MIDREAR OF LEFT REAR DOOR	102.3	-29.8	31.4				
	LATERAL				114.4	16.3	117.9	39.1
	Delta VY is 27.5 MPH @ 26.1 MSEC							

# VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY CONTINUED

TEST NUMBER 900514

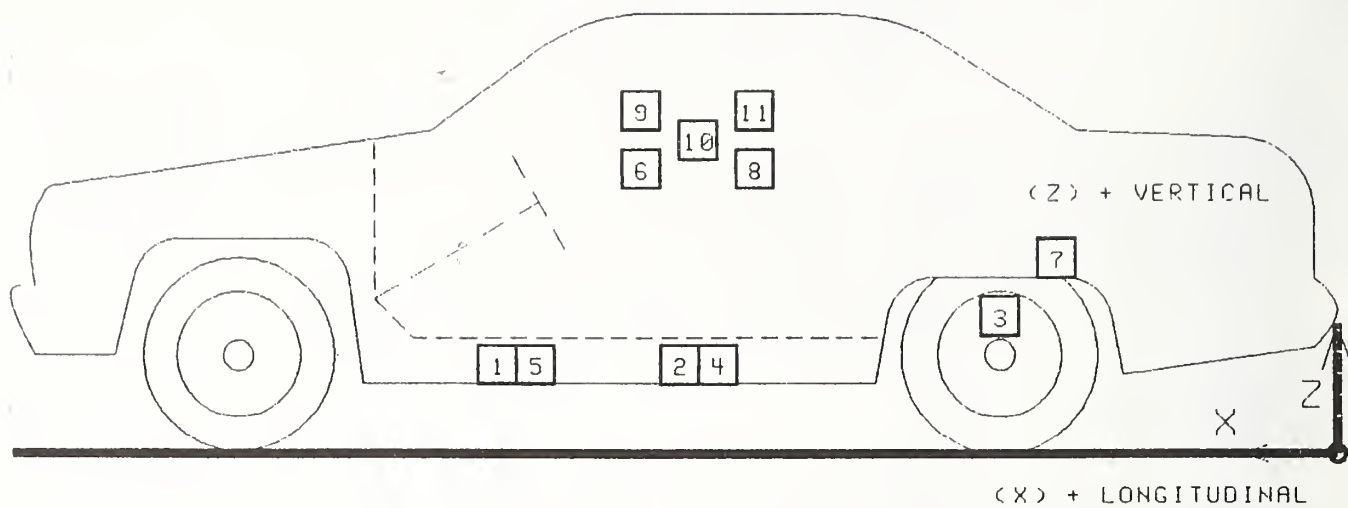
No.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX G	MSEC	MAX G	MSEC
9	UPPER LEFT FRONT DOOR CENTERLINE LATERAL	107.0	-29.9	32.4	57.9	20.3	176.1	34.1
		Delta VY is 18.6 MPH @ 25.5 MSEC						
10	MIDFRONT OF LEFT FRONT DOOR LATERAL	67.6	-29.9	31.2	64.1	13.4	78.2	32.4
		Delta VY is 19.1 MPH @ 25.5 MSEC						
11	UPPER REAR OF LEFT REAR DOOR LATERAL	71.8	-29.6	33.4	77.9	17.4	63.9	36.8
		Delta VY is 24.5 MPH @ 26.0 MSEC						

\* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

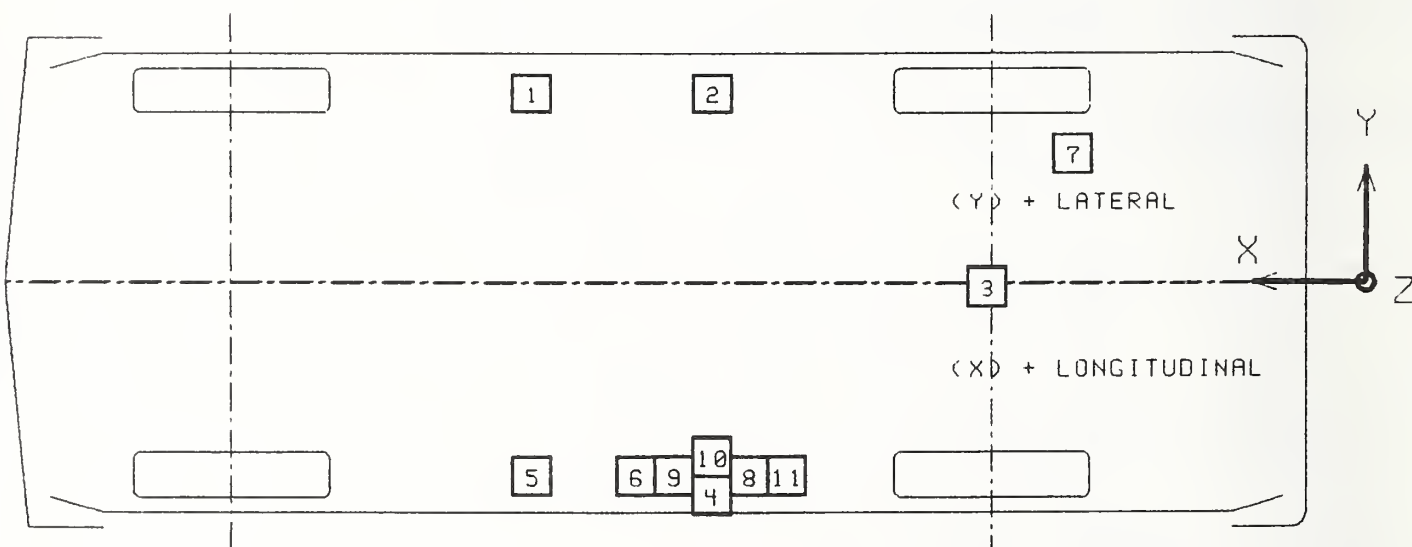
REFERENCE: X: + FORWARD FROM REAR BUMPER  
Y: + RIGHTWARD FROM VEHICLE CENTERLINE  
Z: + UPWARD FROM GROUND LEVEL

All measurements of accelerometer locations in inches.

# VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

## BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 900514

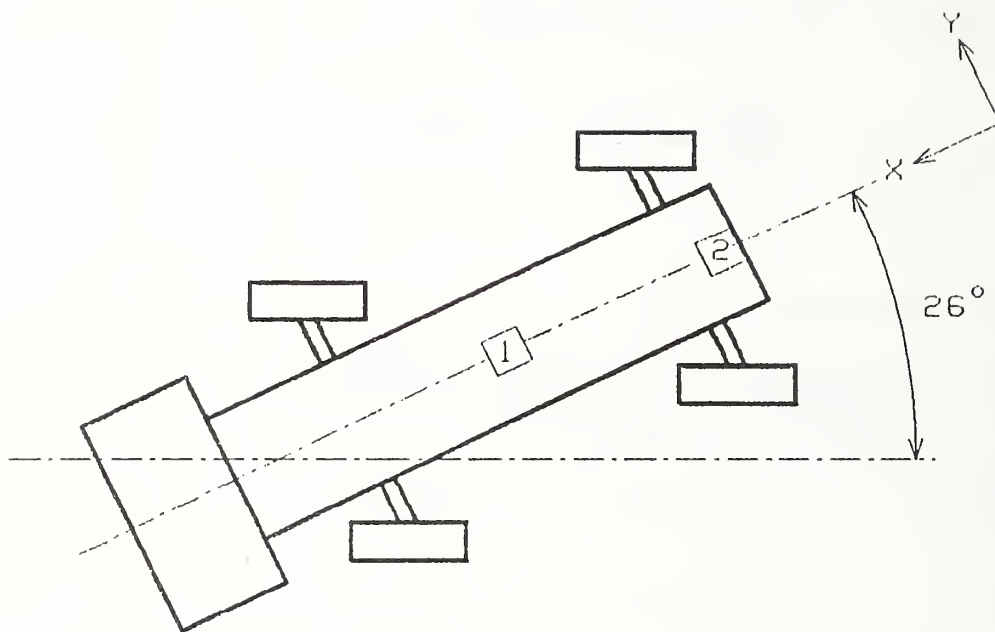
No.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX	G MSEC	MAX	G MSEC
1	CENTER OF GRAVITY	74.2	0.3	12.2				
	LONGITUDINAL				1.2	157.8	16.2	37.1
	LATERAL				1.2	62.0	6.0	31.9
	VERTICAL				3.1	70.4	3.0	55.0
	RESULTANT				16.8	37.0		
		Delta VX is 19.9 MPH @ 120.0 MSEC						
		Delta VY is 4.6 MPH @ 120.0 MSEC						
2	REAR FRAME MEMBER	19.2	0.0	12.0				
	LONGITUDINAL				4.3	239.3	105.9	61.5
	LATERAL				4.3	21.8	2.9	102.0
		Delta VX is 32.7 MPH @ 95.8 MSEC						
		Delta VY is -1.6 MPH @ 95.8 MSEC						

\* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

REFERENCE: X: + FORWARD FROM REAR POINT OF FRAME  
 Y: + RIGHTWARD FROM BARRIER CENTERLINE  
 Z: + UPWARD FROM GROUND LEVEL

All measurements of accelerometer locations in inches.

# MOVING BARRIER ACCELEROMETER PLACEMENT

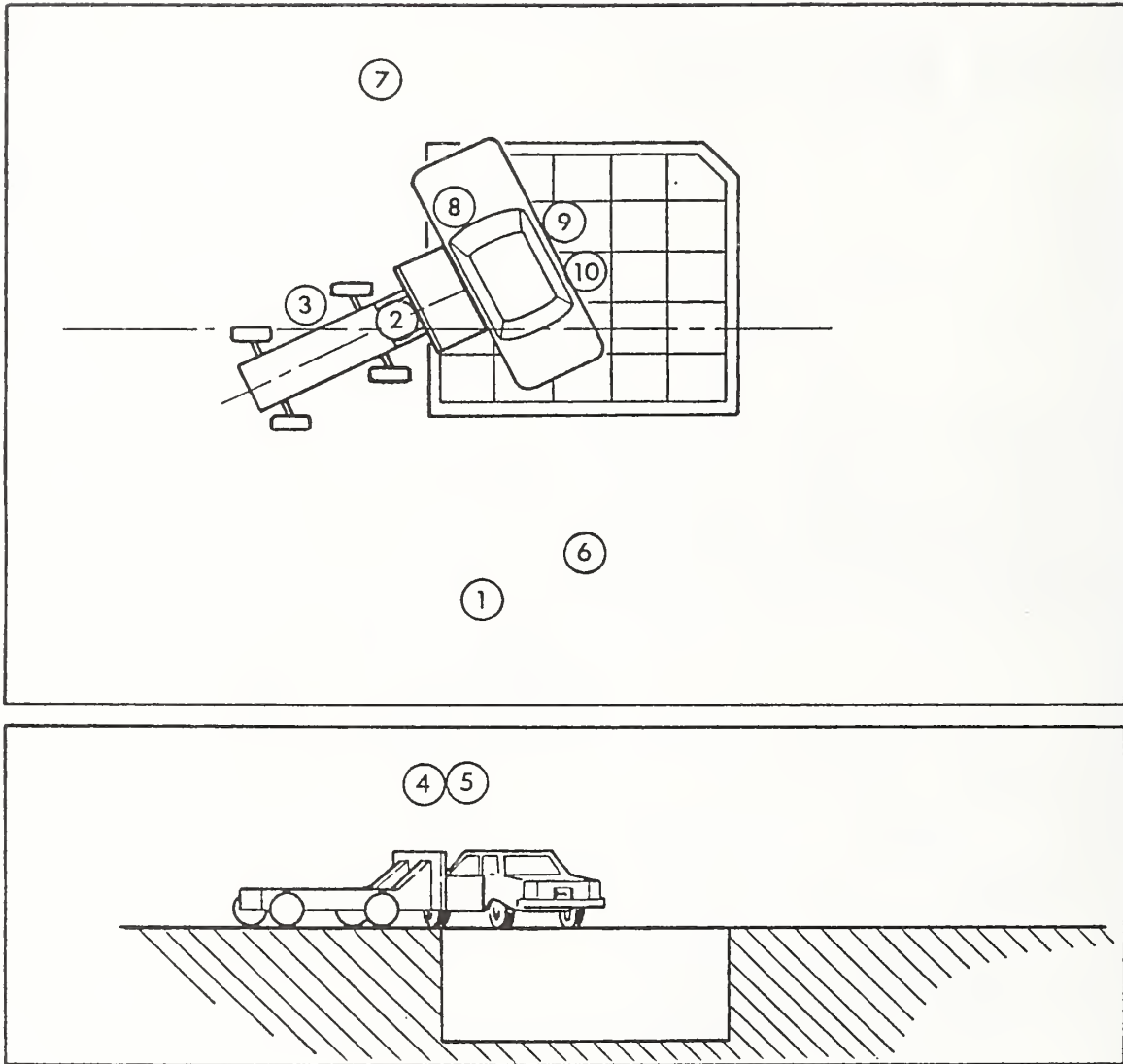


TOP VIEW

## CAMERA INFORMATION

CAMERA NO.	LOCATION	TYPE	LENS (mm)	SPEED (fps)	PURPOSE OF CAMERA DATA
1	Right side panning	Kodak	25	24	Real time documentation
2	Onboard MDB - wide	Photosonic 1B	13	947	Dummy kinematics
3	Onboard MDB - tight	Photosonic 1B	25	1002	Close-up of impact point
4	Overhead - wide	Photosonic 1B	8.5	1000	Vehicle dynamics
5	Overhead - tight	Photosonic 1B	25	1000	Close-up vehicle dynamic
6	Ground level - right	Photosonic 1B	25	1000	Overall view
7	Ground level - left	Photosonic 1B	25	1002	Overall view
8	Onboard windshield	Photosonic 1B	8	1000	Driver kinematics - Frt.
9	Onboard driver	Photosonic 1B	8	1000	Driver kinematics
10	Onboard passenger	Photosonic 1B	8	1005	Passenger kinematics

# CAMERA LOCATION



APPENDIX A

PHOTOGRAPHS





Figure A-1. PRE-TEST VEHICLE FRONT AND BARRIER VIEW



Figure A-2. POST-TEST VEHICLE FRONT AND BARRIER VIEW



Figure A-3. PRE-TEST VEHICLE RIGHT SIDE VIEW



Figure A-4. POST-TEST VEHICLE RIGHT SIDE VIEW



Figure A-5. PRE-TEST VEHICLE REAR AND BARRIER VIEW



Figure A-6. POST-TEST VEHICLE REAR AND BARRIER VIEW



Figure A-7. PRE-TEST VEHICLE LEFT AND BARRIER VIEW



Figure A-8. POST-TEST VEHICLE LEFT SIDE VIEW



Figure A-9. PRE-TEST VEHICLE LEFT FRONT CLOSE-UP VIEW



Figure A-10. POST-TEST VEHICLE LEFT FRONT CLOSE-UP VIEW



Figure A-11. PRE-TEST VEHICLE LEFT REAR CLOSE-UP VIEW



Figure A-12. POST-TEST VEHICLE LEFT REAR CLOSE-UP VIEW

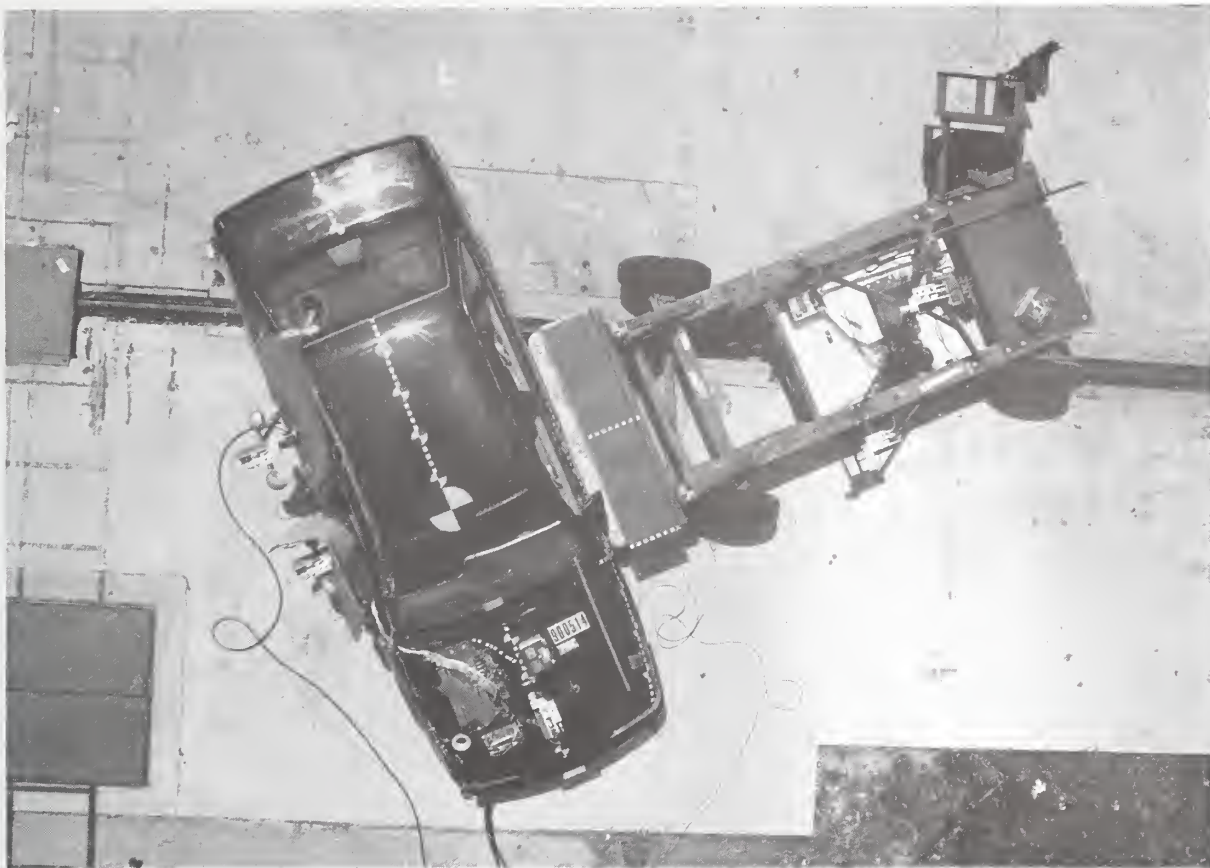


Figure A-13. PRE-TEST VEHICLE TOP - VIEW 1

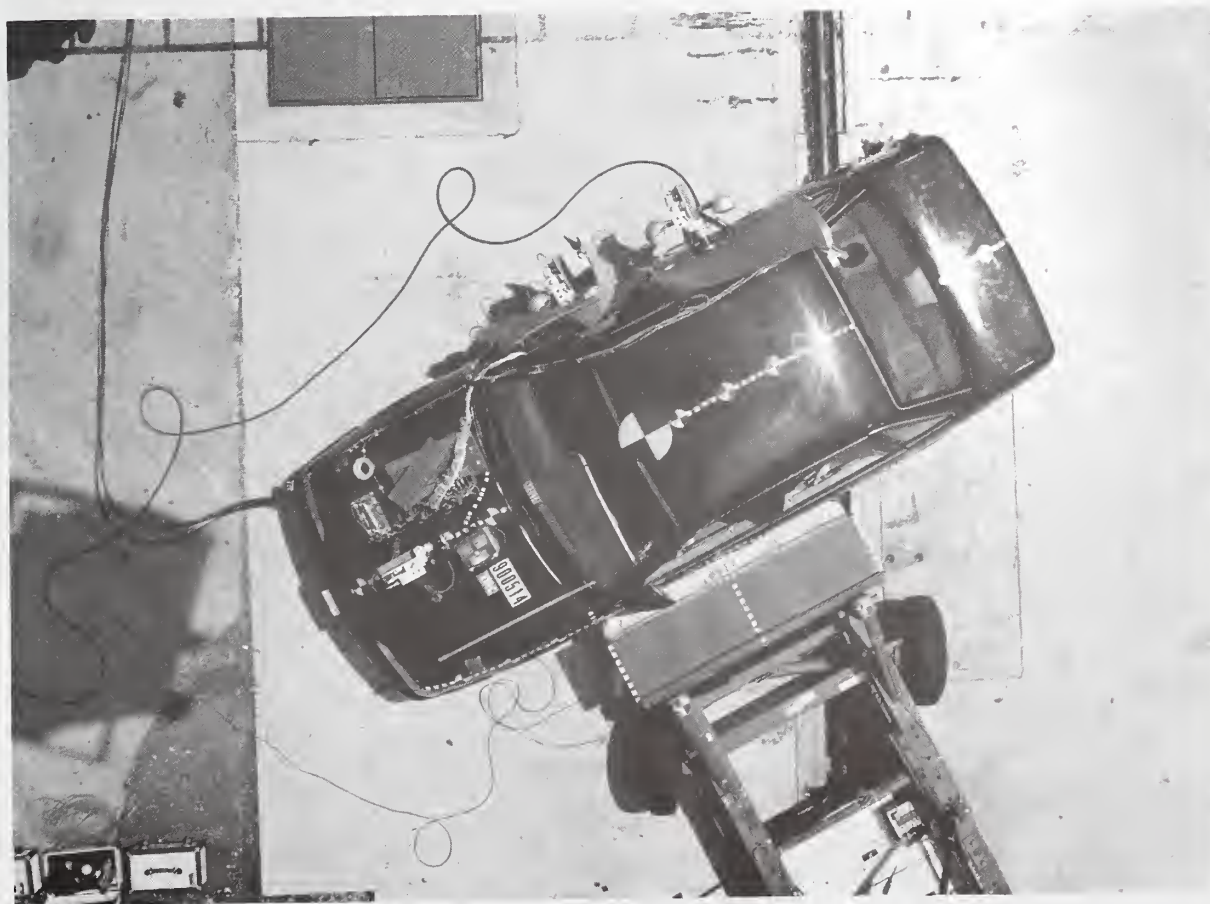


Figure A-14. PRE-TEST VEHICLE TOP - VIEW 2



Figure A-15. POST-TEST VEHICLE TOP - VIEW 1



Figure A-16. POST-TEST VEHICLE TOP - VIEW 2



Figure A-17. PRE-TEST LEFT FRONT DOOR ACCELEROMETERS VIEW



Figure A-18. PRE-TEST LEFT FRONT SILL ACCELEROMETER VIEW



Figure A-19. PRE-TEST LEFT REAR DOOR ACCELEROMETERS VIEW



Figure A-20. PRE-TEST LEFT REAR SILL ACCELEROMETER VIEW



Figure A-21. PRE-TEST RIGHT FRONT SILL ACCELEROMETER VIEW



Figure A-22. PRE-TEST RIGHT REAR SILL ACCELEROMETER VIEW



Figure A-23. PRE-TEST TRUNK AREA ACCELEROMETER - VIEW 1



Figure A-24. PRE-TEST TRUNK AREA ACCELEROMETER - VIEW 2

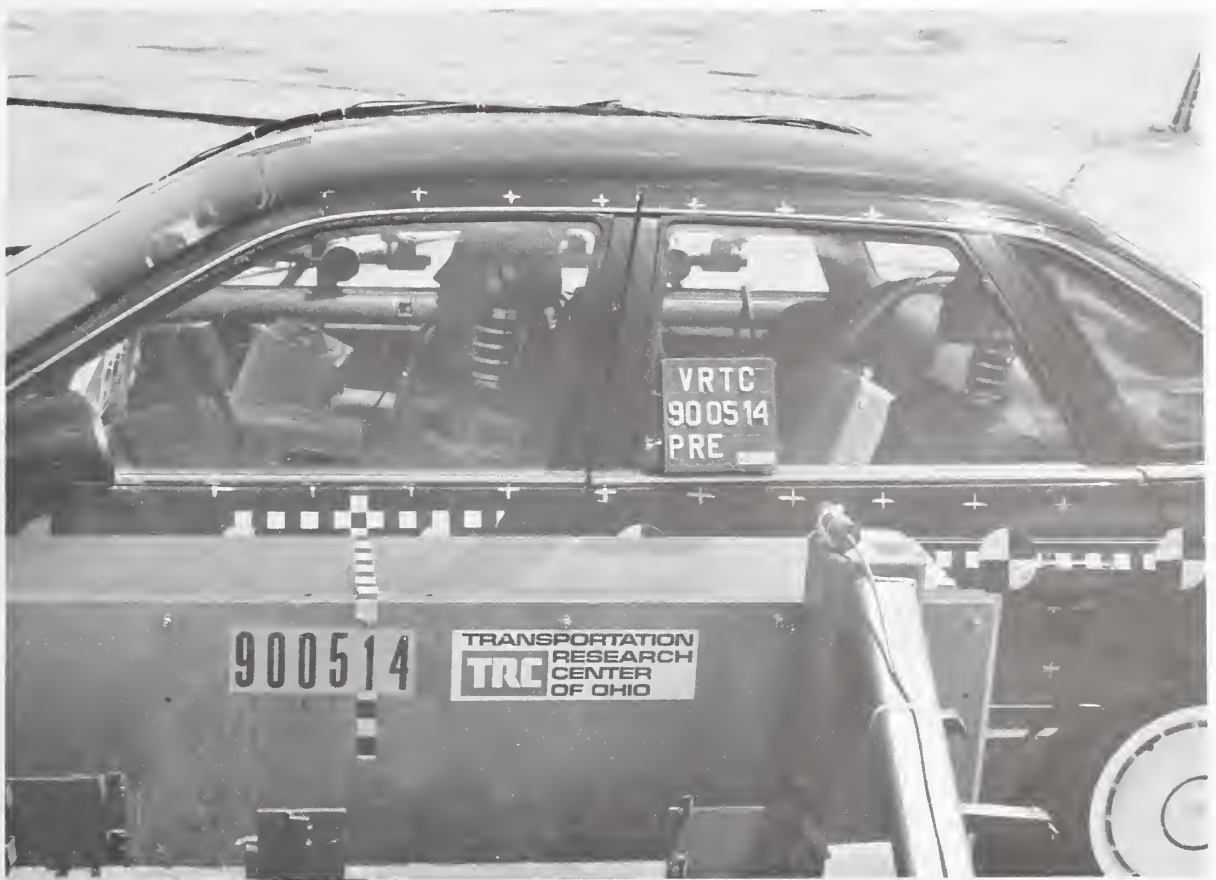


Figure A-25. PRE-TEST DRIVER AND PASSENGER DUMMIES LEFT SIDE VIEW



Figure A-26. POST-TEST DRIVER AND PASSENGER DUMMIES LEFT SIDE VIEW



Figure A-27. PRE-TEST DRIVER AND PASSENGER DUMMIES RIGHT SIDE VIEW



Figure A-28. POST-TEST DRIVER AND PASSENGER DUMMIES RIGHT SIDE VIEW



Figure A-29. PRE-TEST DRIVER DUMMY - VIEW 1



Figure A-30. PRE-TEST DRIVER DUMMY - VIEW 2

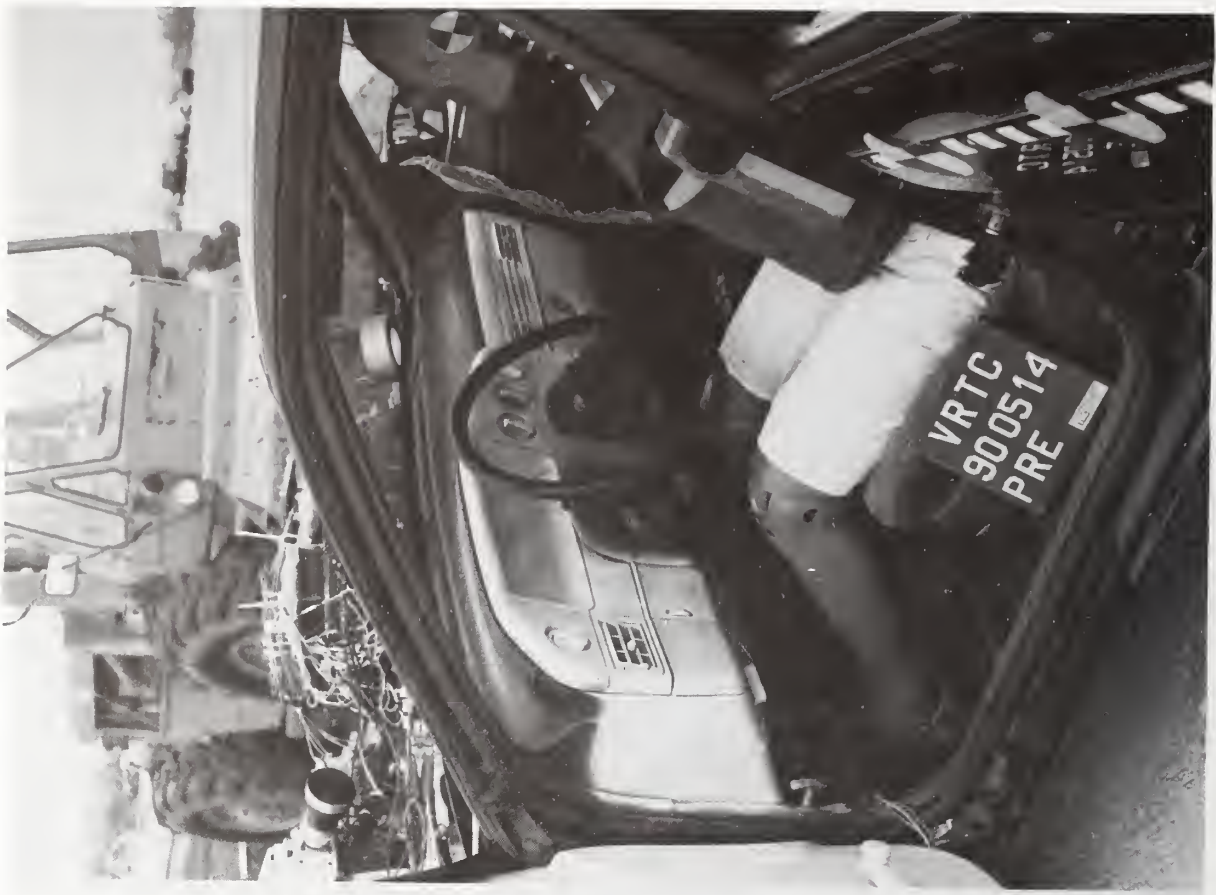


Figure A-31. PRE-TEST DRIVER DUMMY - VIEW 3



Figure A-32. POST-TEST DRIVER DUMMY VIEW



Figure A-33. PRE-TEST PASSENGER DUMMY VIEW



Figure A-34. POST-TEST PASSENGER DUMMY VIEW



Figure A-35. POST-TEST DRIVER DUMMY CONTACT VIEW



Figure A-36. POST-TEST PASSENGER DUMMY CONTACT VIEW

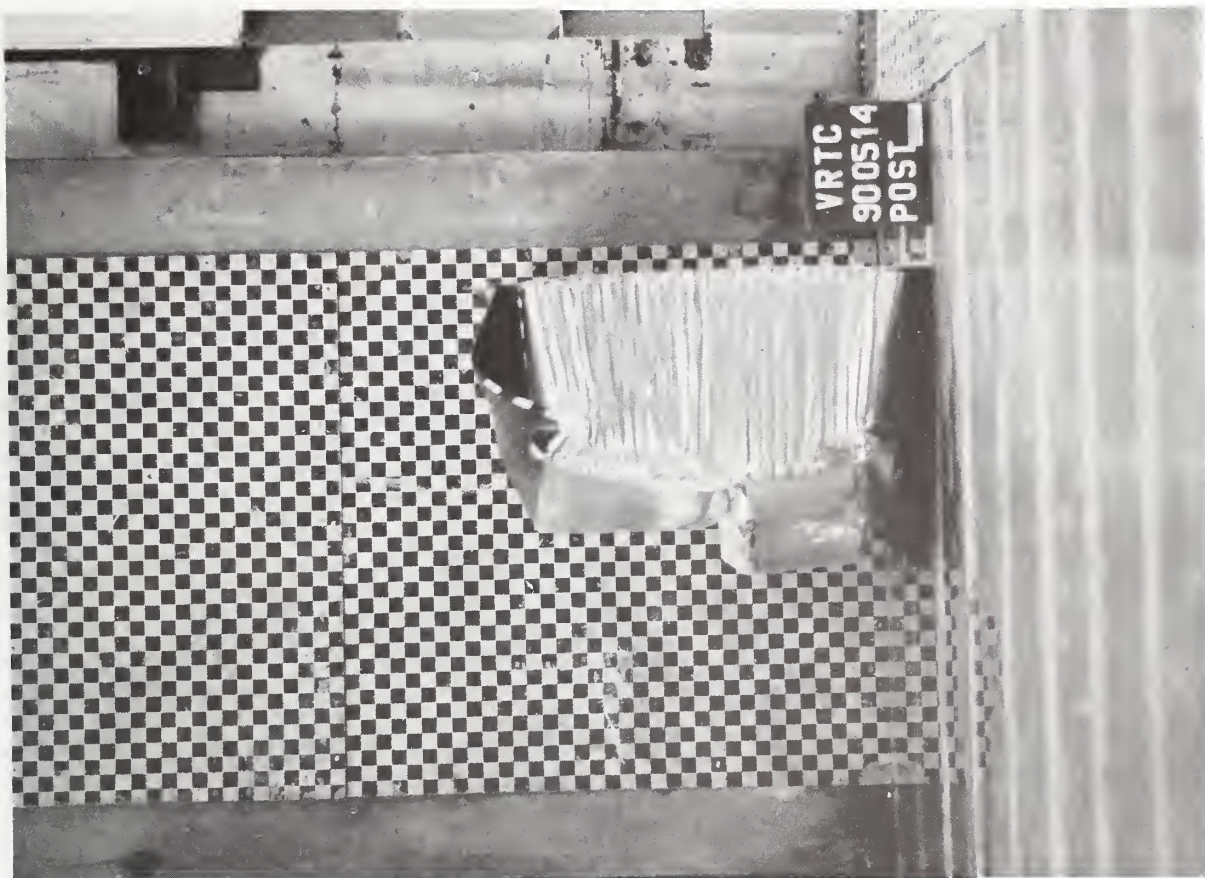


Figure A-37. POST-TEST BARRIER FACE - VIEW 1

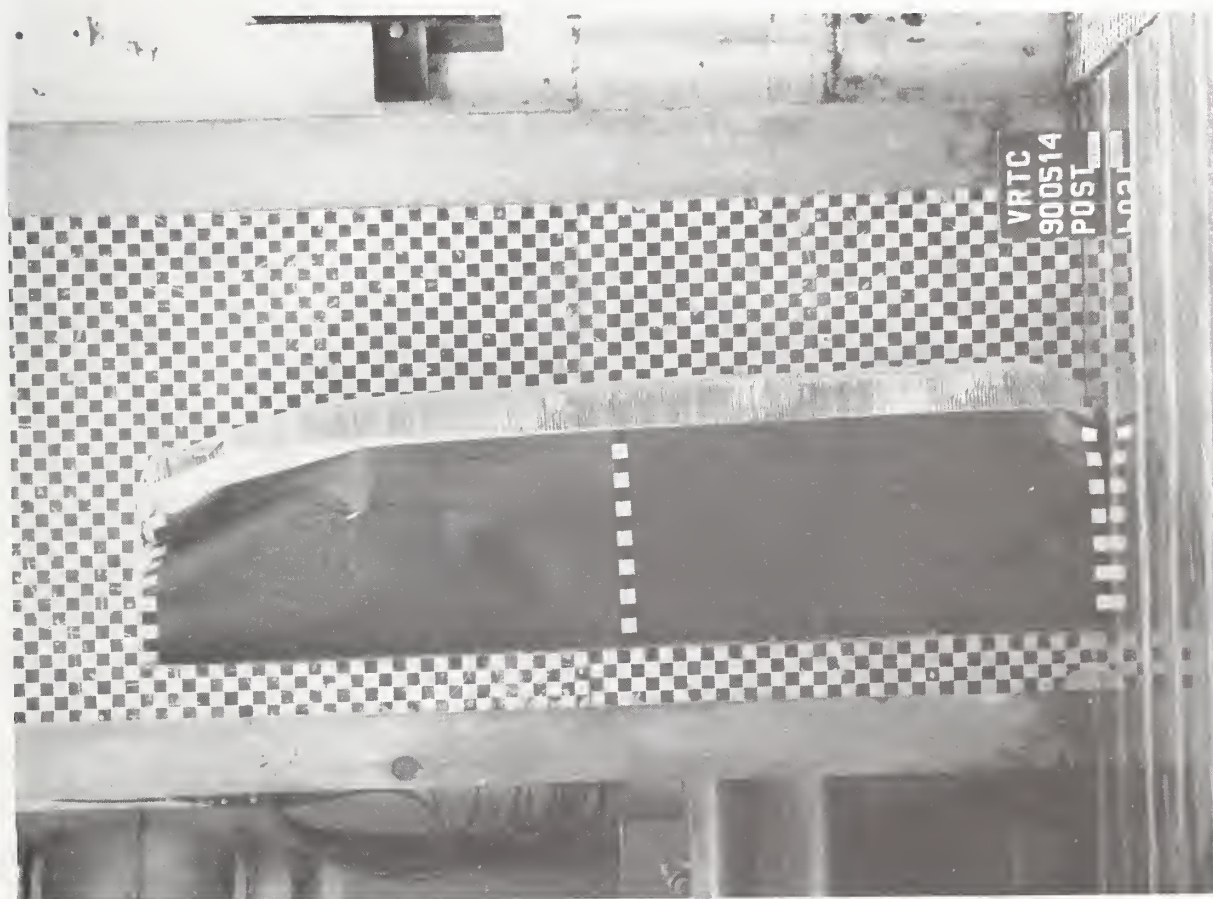


Figure A-38. POST-TEST BARRIER FACE - VIEW 2



## APPENDIX B

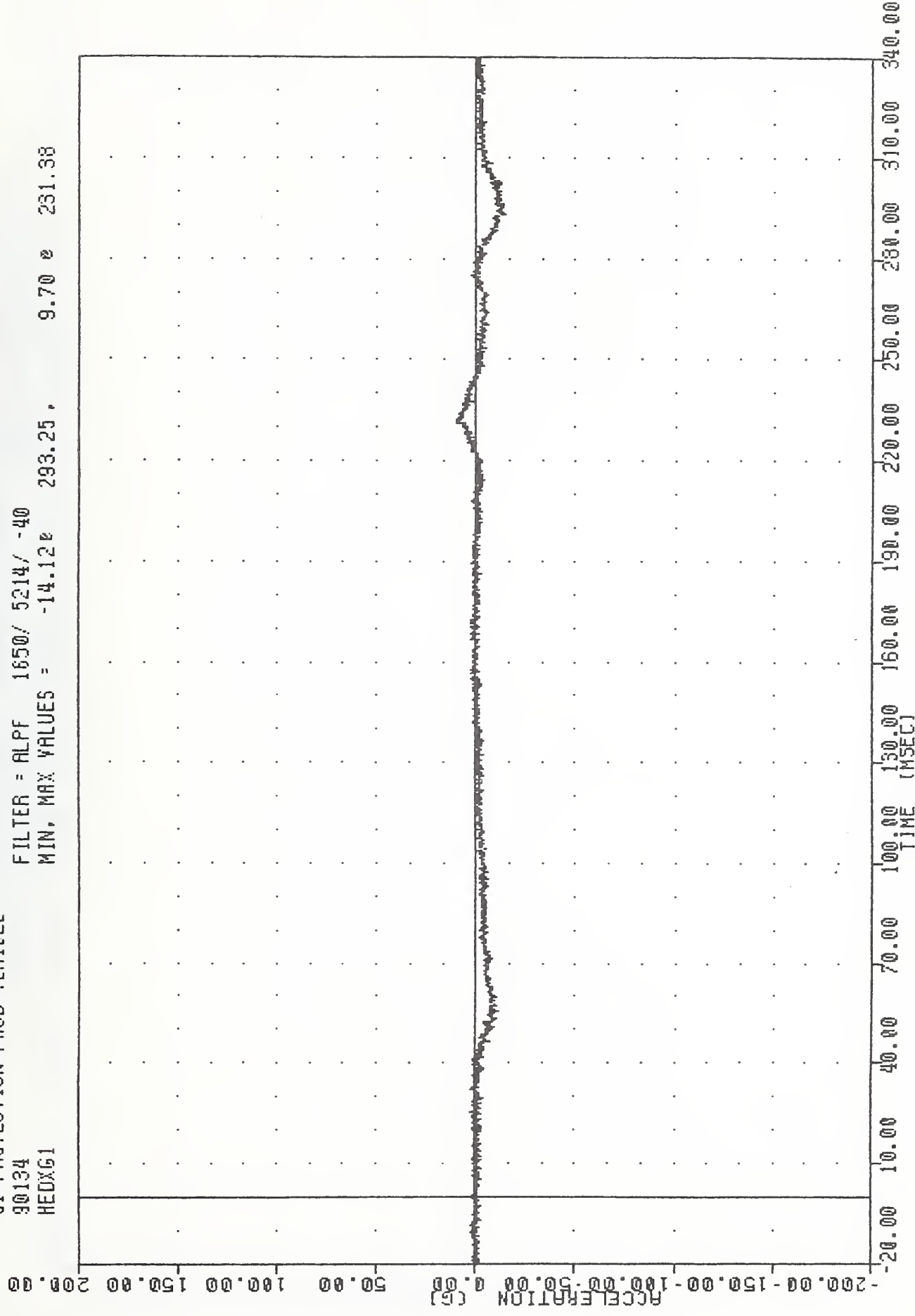
### DATA PLOT PRESENTATION

Data plots generated from the crash test data are presented on the following pages. All data are recorded on magnetic tape for inclusion in the NHTSA crash test data base system. All data were filtered according to SAE J211b, except that dummy thorax and pelvis data were filtered using the HSRI filter.



VRTC . 900514  
SI PROTECTION PROD VEHICLE  
90134  
HEDXG1

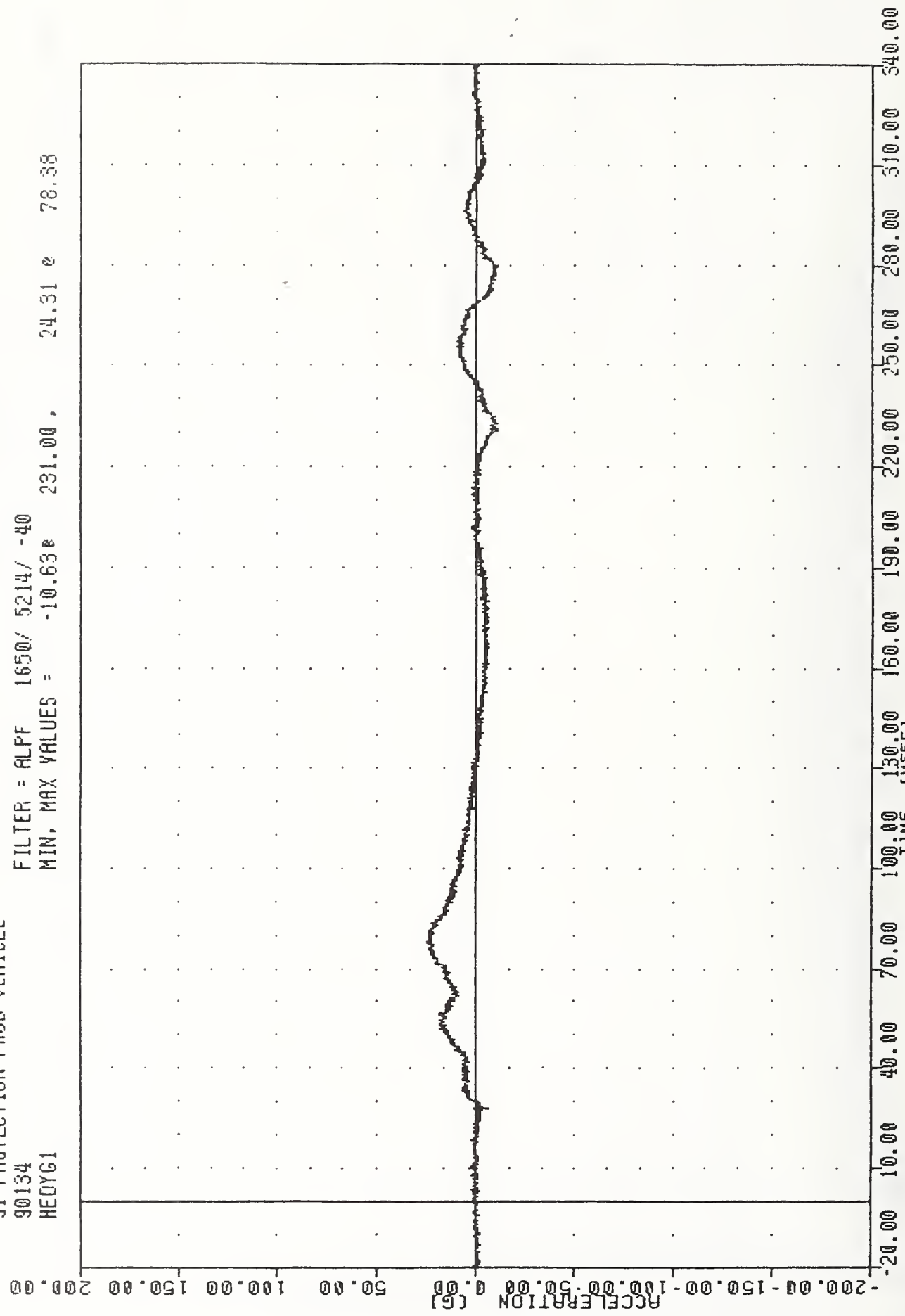
FILTER = ALPF 1650/ 5214/ -40  
MIN, MAX VALUES = -14.12e 293.25, 9.70 e 231.38



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER HEAD X AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
HEDYG1

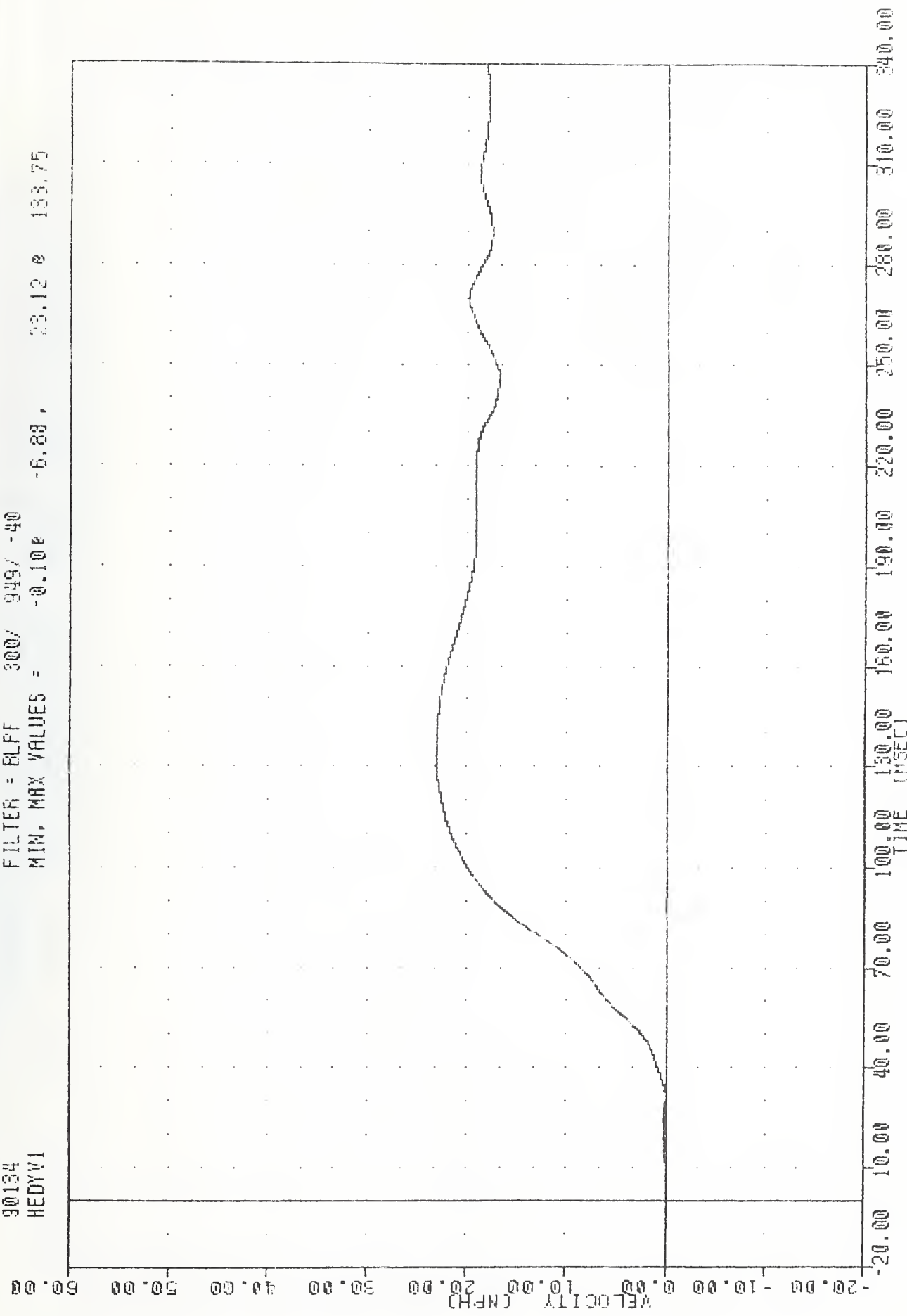
FILTER = ALPF 1650/ 5214/ -40  
MIN, MAX VALUES = -10.638 231.00 , 24.31 e 78.38



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER HEAD Y AXIS ACCELERATION

VRIC  
SI PROTECTION PROD VEHICLE  
30134  
HEDYV1

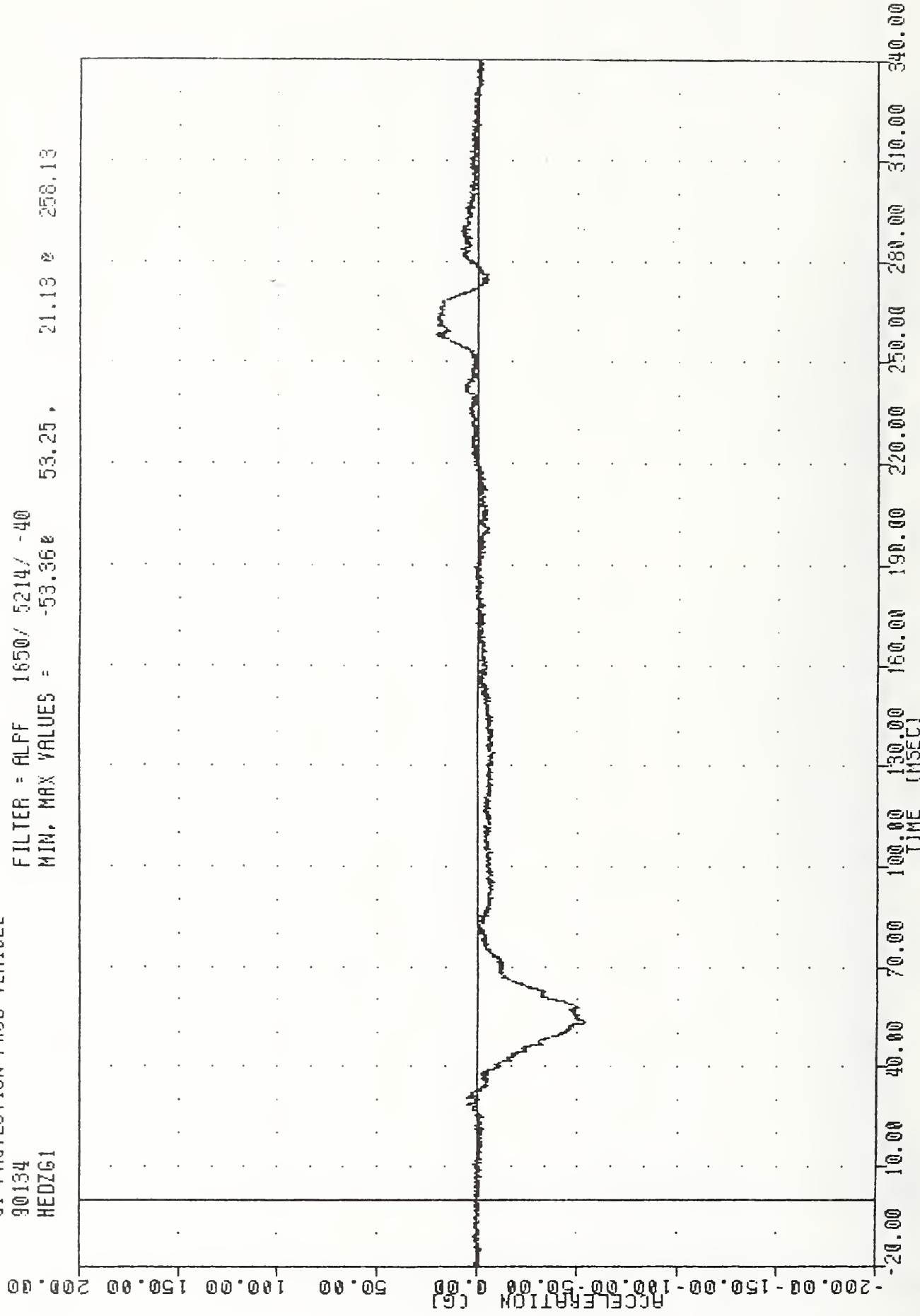
FILTER = BLPF 300/ 949/ -40  
MIN, MAX VALUES = -0.100 -6.88, 23.12 0 133.75



MOVING DEFORMABLE BARRIER INTO FORD TAURUS SENTRA  
DRIVER HEAD Y AXIS VELOCITY

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
HEDZG1

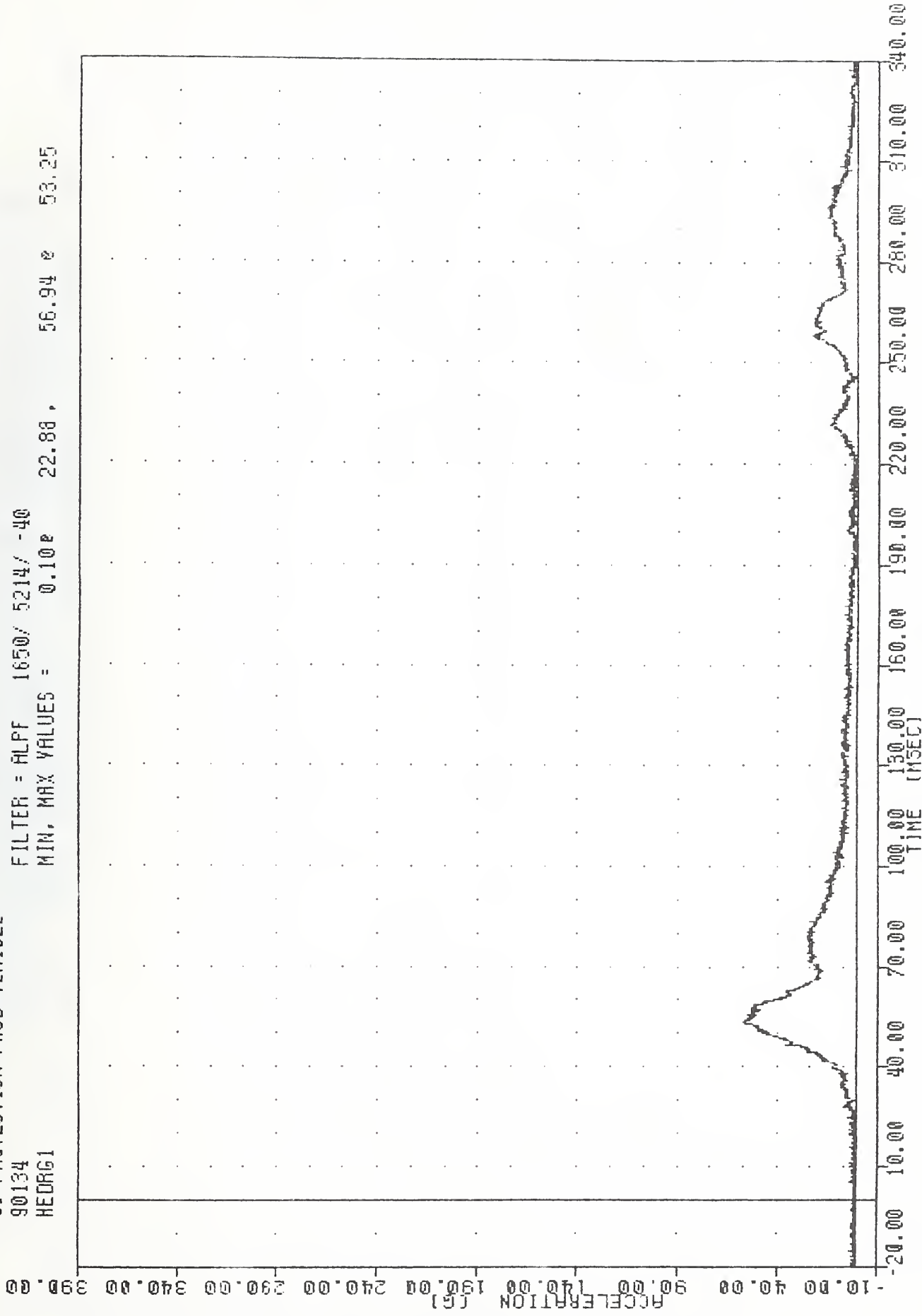
FILTER = ALPF 1650/ 5214/ -40  
MIN, MAX VALUES = -53.36 53.25, 21.13 258.13



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER HEAD 7 AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION PRGD VEHICLE  
90134  
HEDRG1

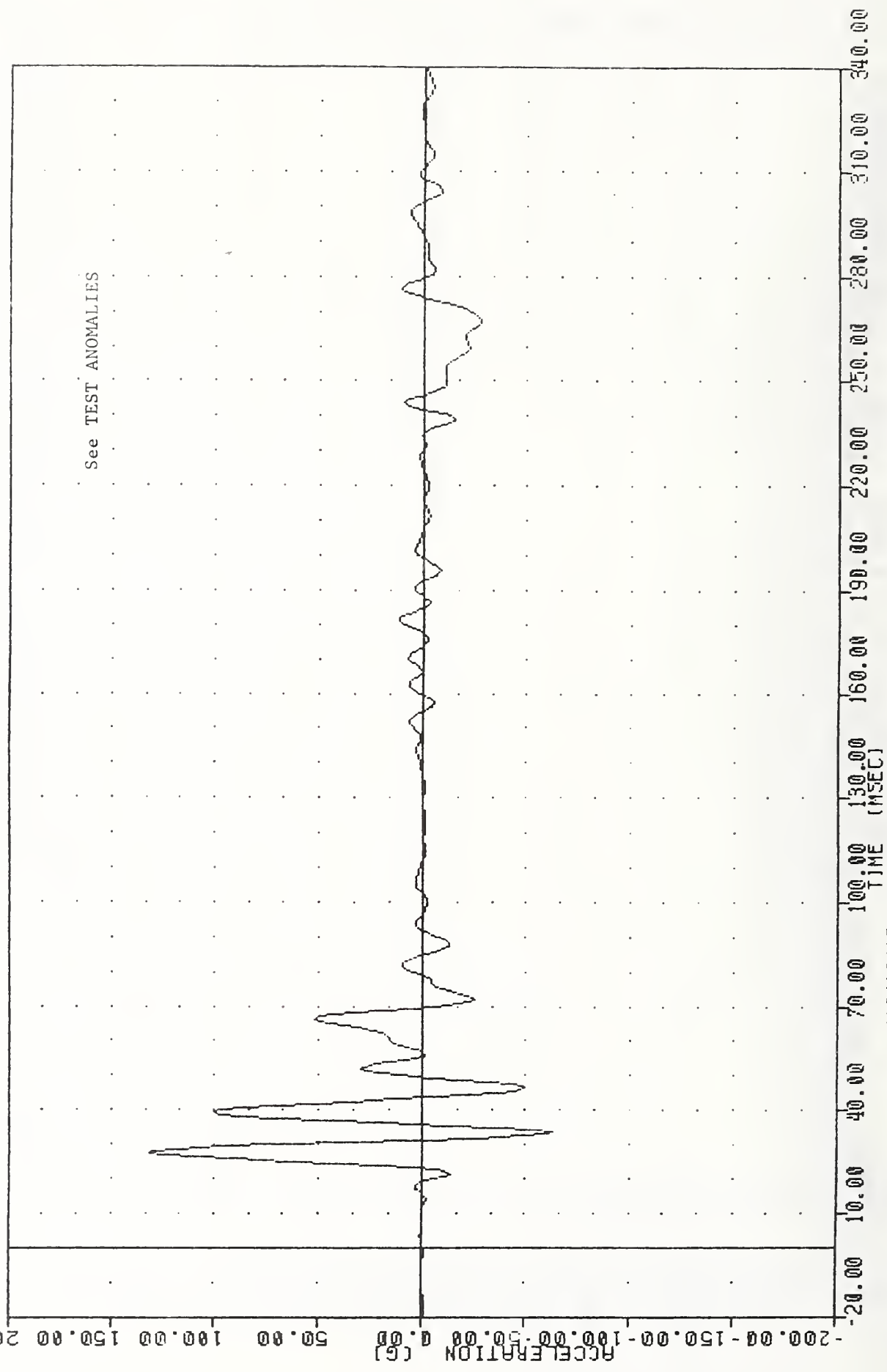
FILTER = ALPF 1650/ 5214/ -40  
MIN, MAX VALUES = 0.10e 22.88 , 56.94 e 53.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER HEAD RESULTANT ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
SHLY61

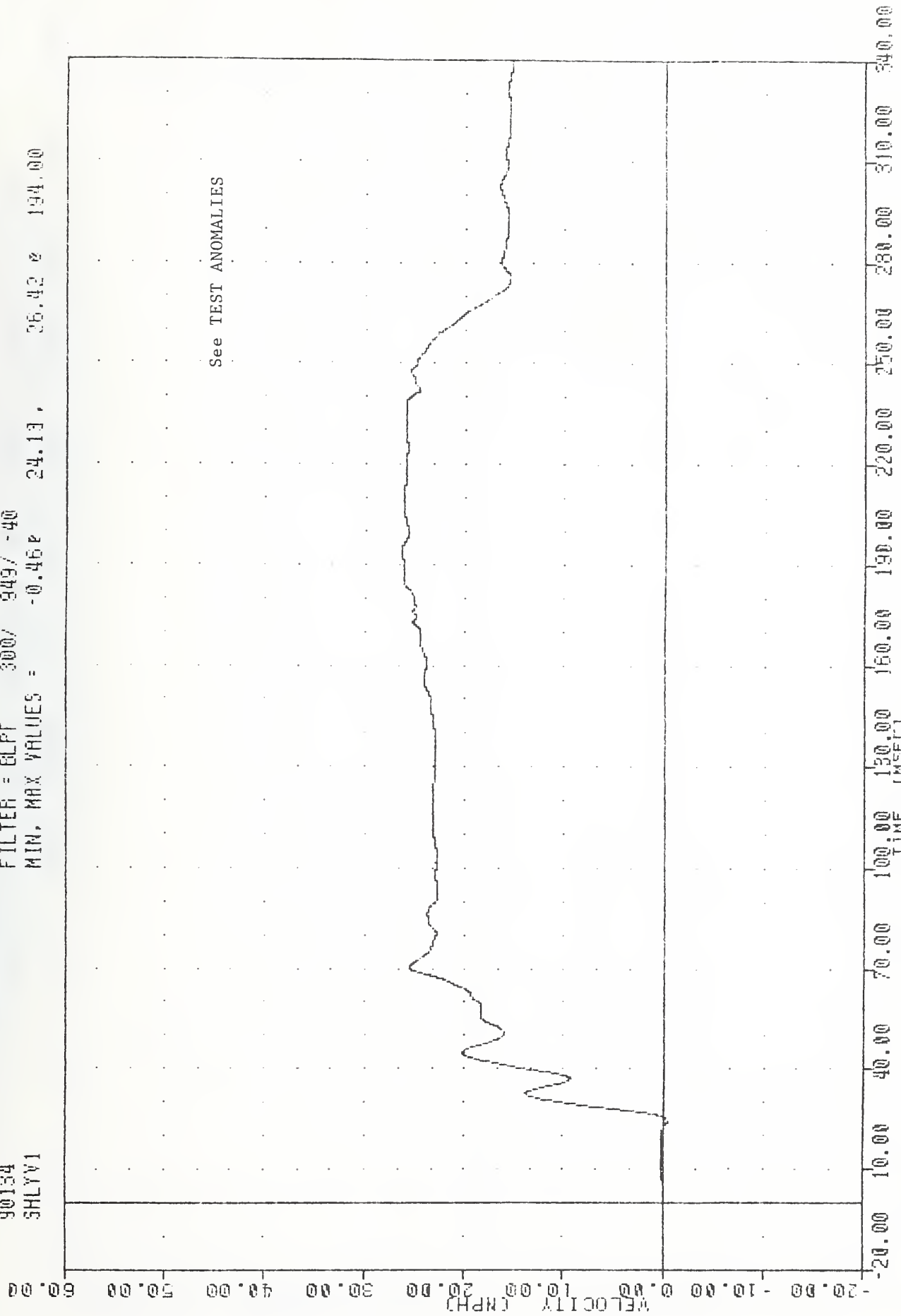
FILTER = HSR1 136/ 189/ -50  
MIN, MAX VALUES = -63.36 33.75 , 131.60 27.50



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER LEFT SHOULDER Y AXIS ACCELERATION

VRTC . 900514  
SI PROTECTION PROD VEHICLE  
90134  
SHLYV1

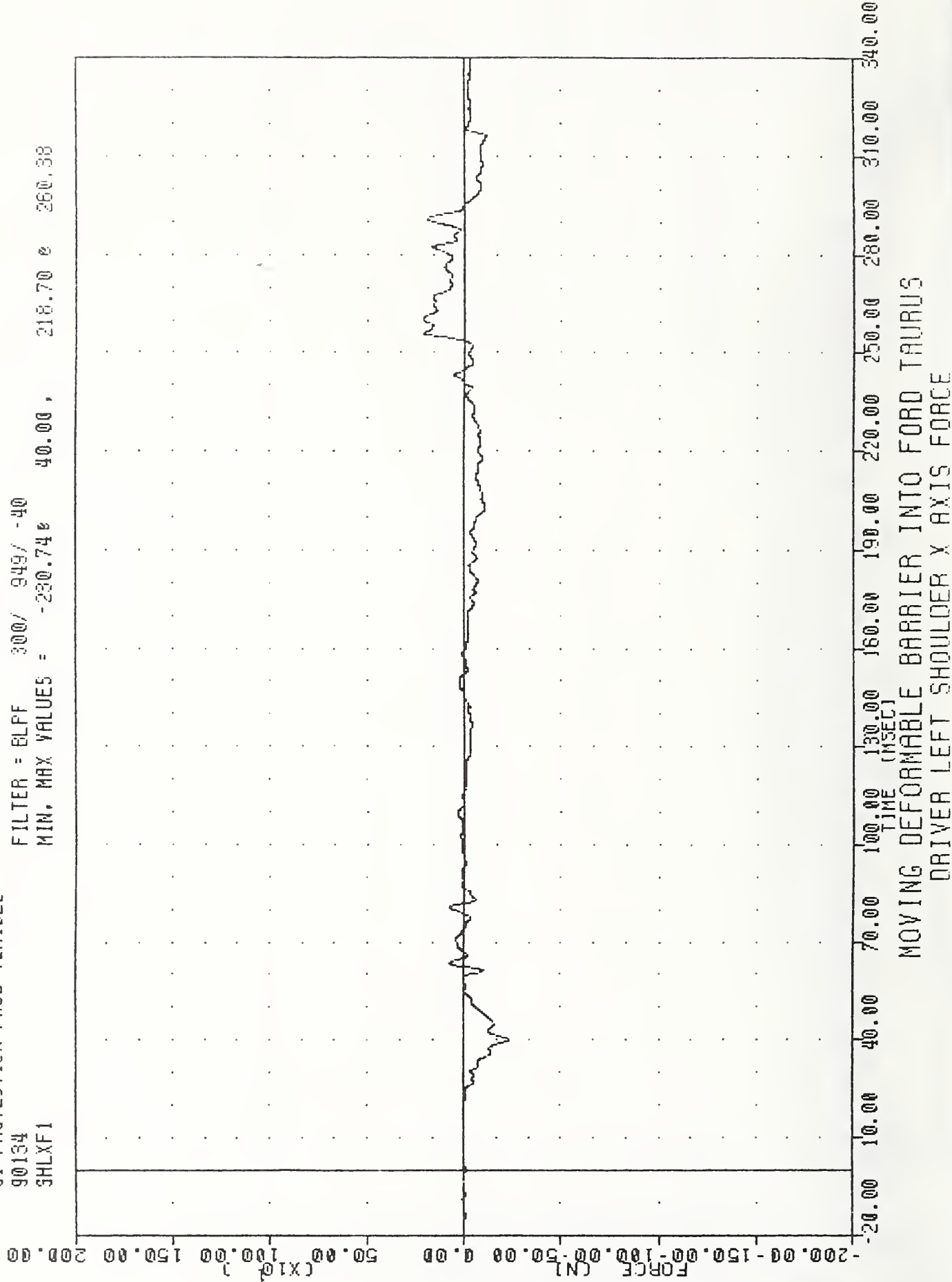
FILTER = BLPF 300/ 949/ -40  
MIN, MAX VALUES = -0.46 24.13, 26.42 194.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS SENTRA  
DRIVER LEFT SHOULDER Y AXIS VELOCITY

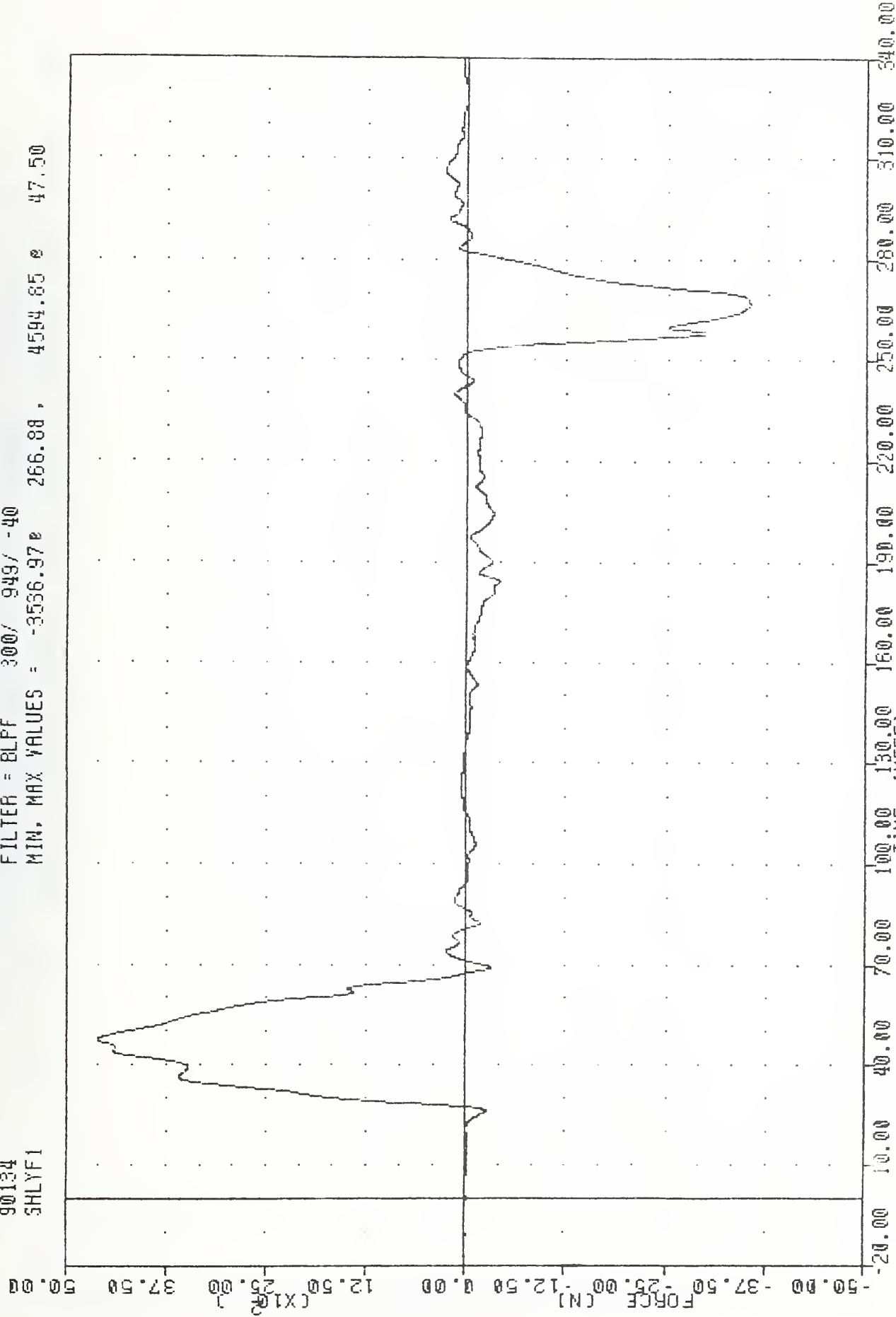
VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
SHLXF1

FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -230.74e 40.00 , 218.70 e 260.38



VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
SHLYF1

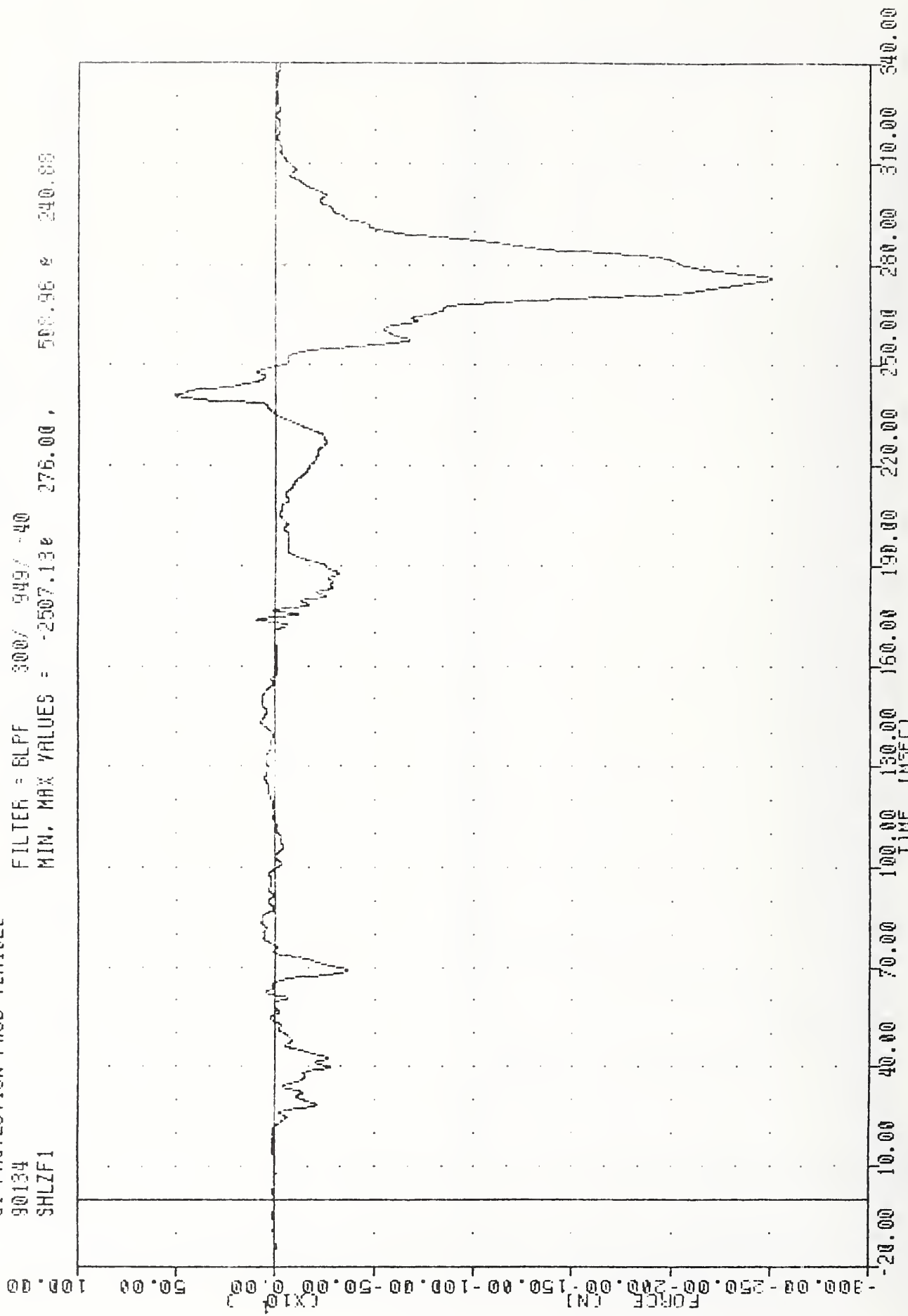
FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -3536.97e 266.88, 4594.85 e 47.50



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER LEFT SHOULDER Y AXIS FORCE

VRIC, 900514  
SI PROTECTION PASS VEHICLE  
90134  
SHLZF1

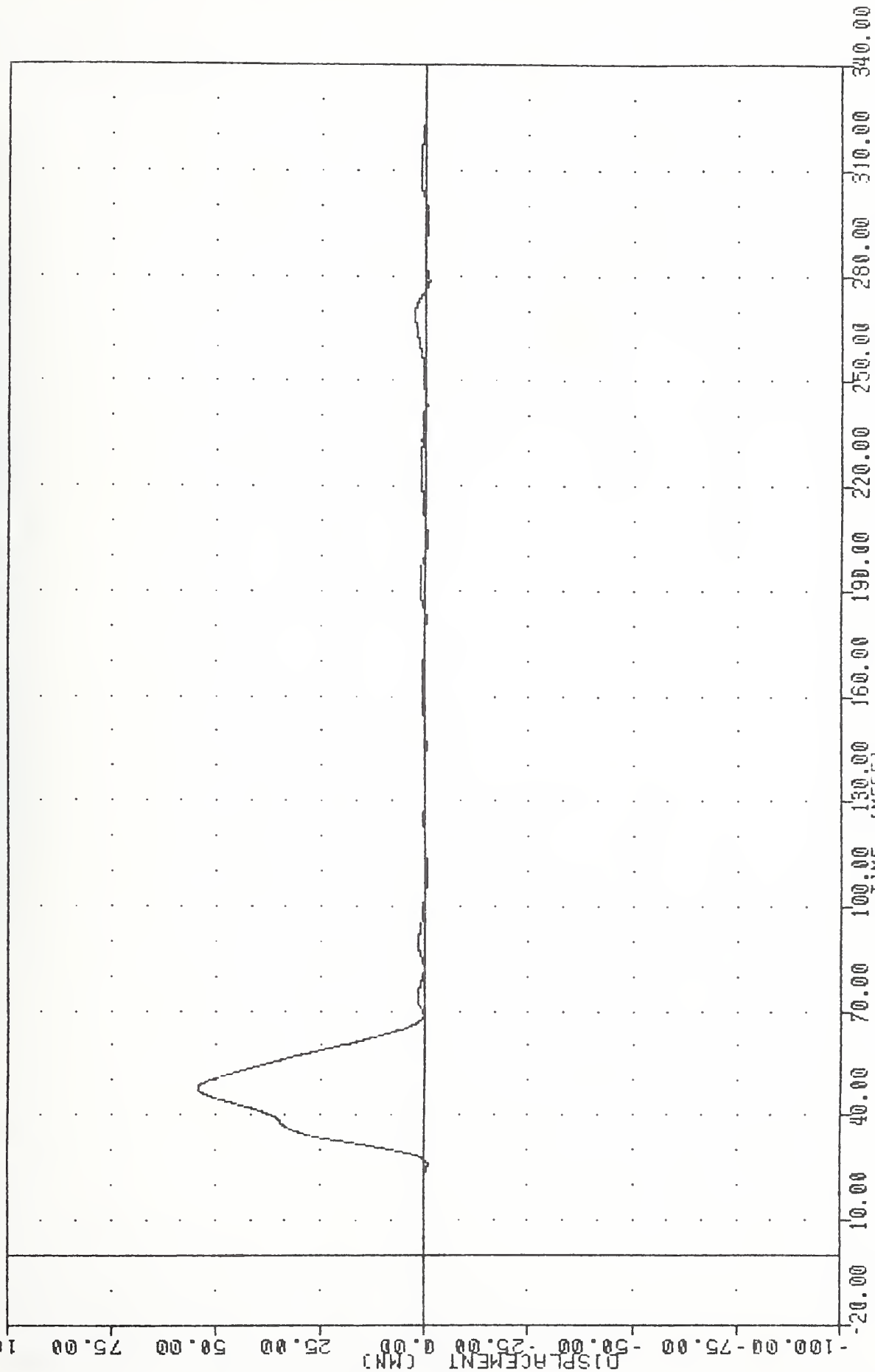
FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -2507.13e 276.00, 508.96 e 240.80



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER LEFT SHOULDER Z AXIS FORCE

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
SHLYD1

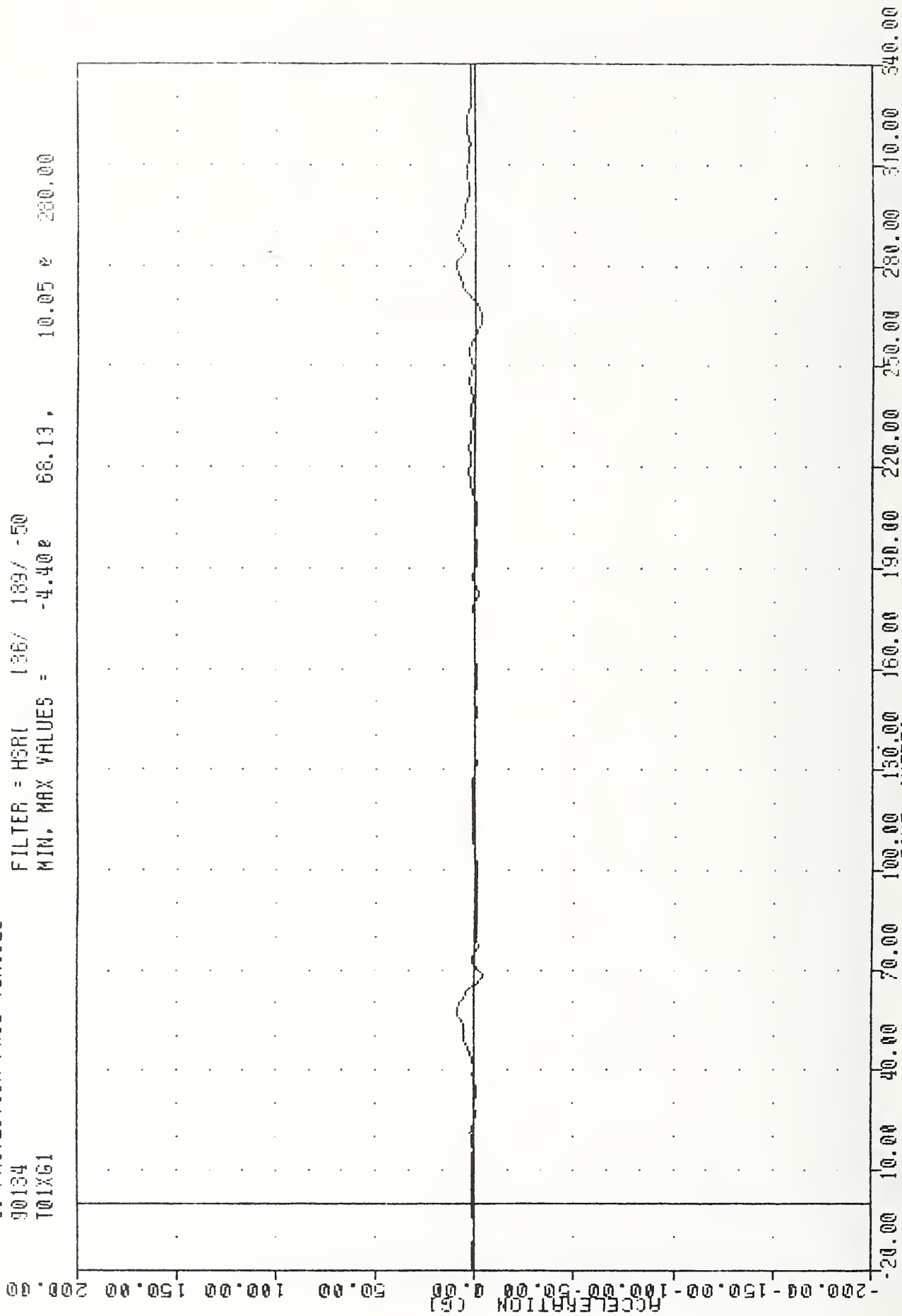
FILTER = 6LPF 300/ 949/ -40  
MIN, MAX VALUES = -0.70e 278.63, 54.39 e 47.75



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER LEFT SHOULDER TO SPINE DISPLACEMENT

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 T01XG1

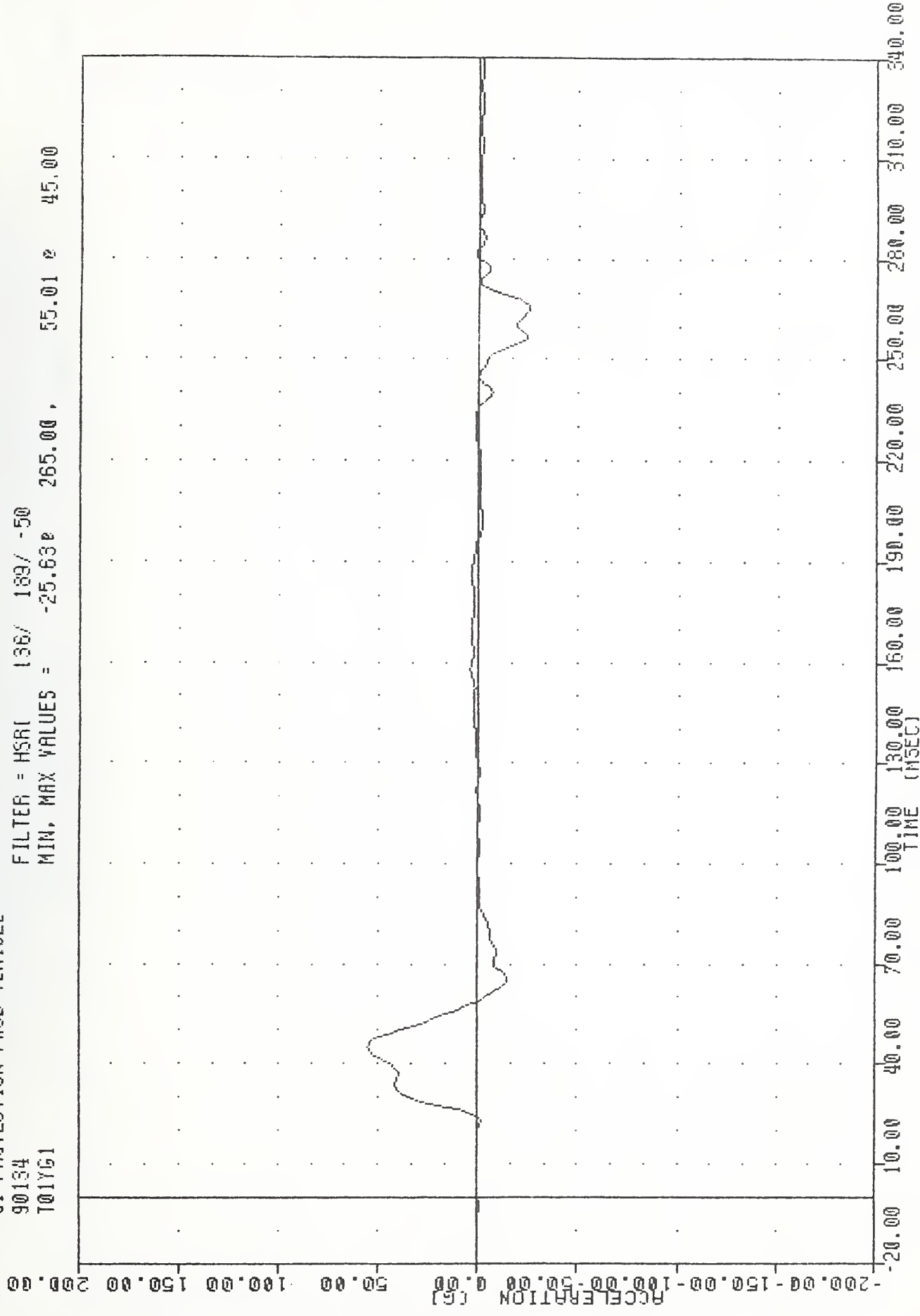
FILTER = HSR( 136/ 139/ -50  
 MIN. MAX VALUES = -4.40e 68.13, 10.05 e 280.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 DRIVER UPPER SPINE X AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
T01YG1

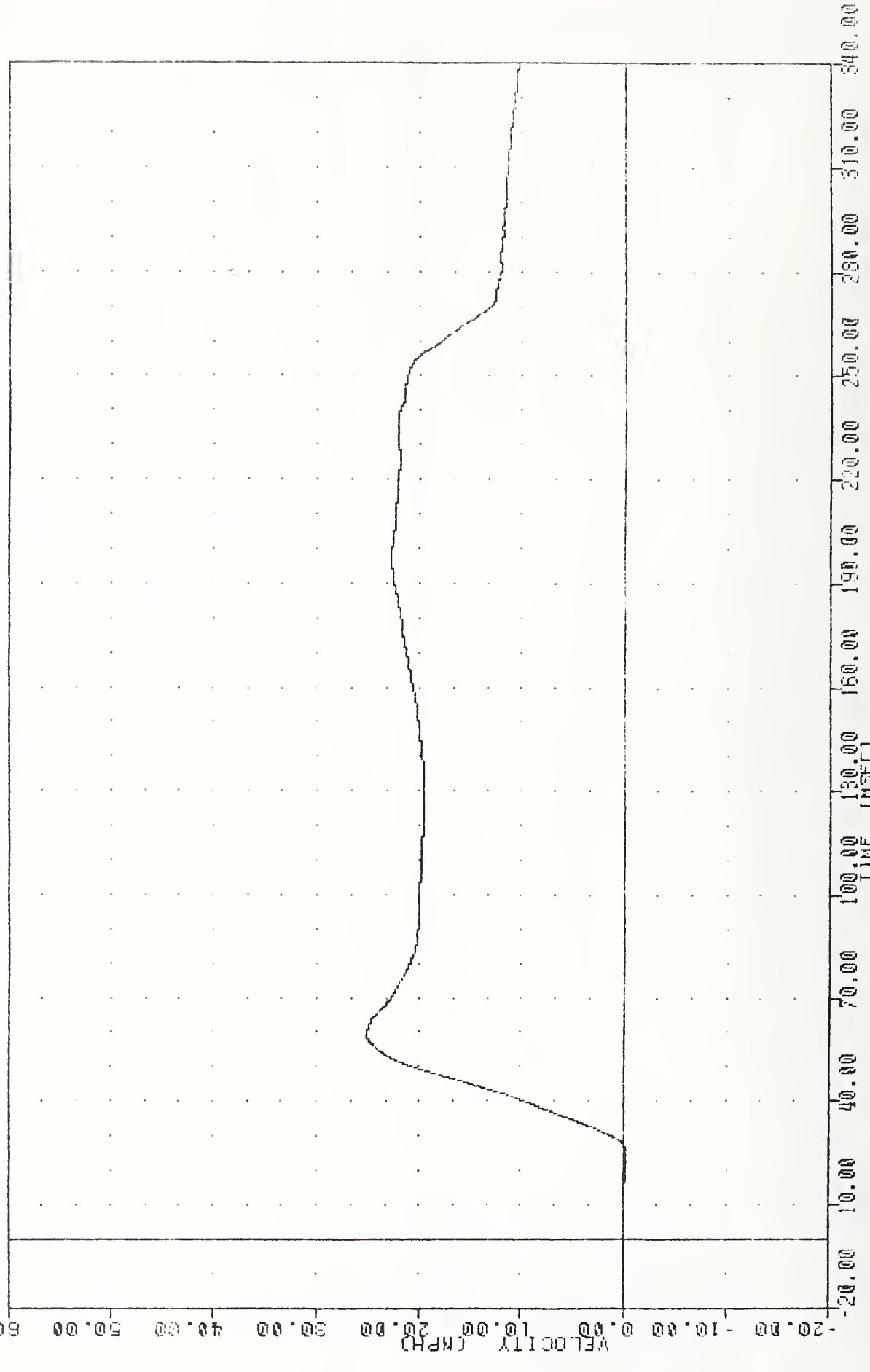
FILTER = HSRI 136/ 189/ -50  
MIN, MAX VALUES = -25.63e 265.00 , 55.01 e 45.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER UPPER SPINE Y AXIS ACCELERATION

NOTE: 80W514  
SI PROTECTION PROD VEHICLE  
90134  
101YV1

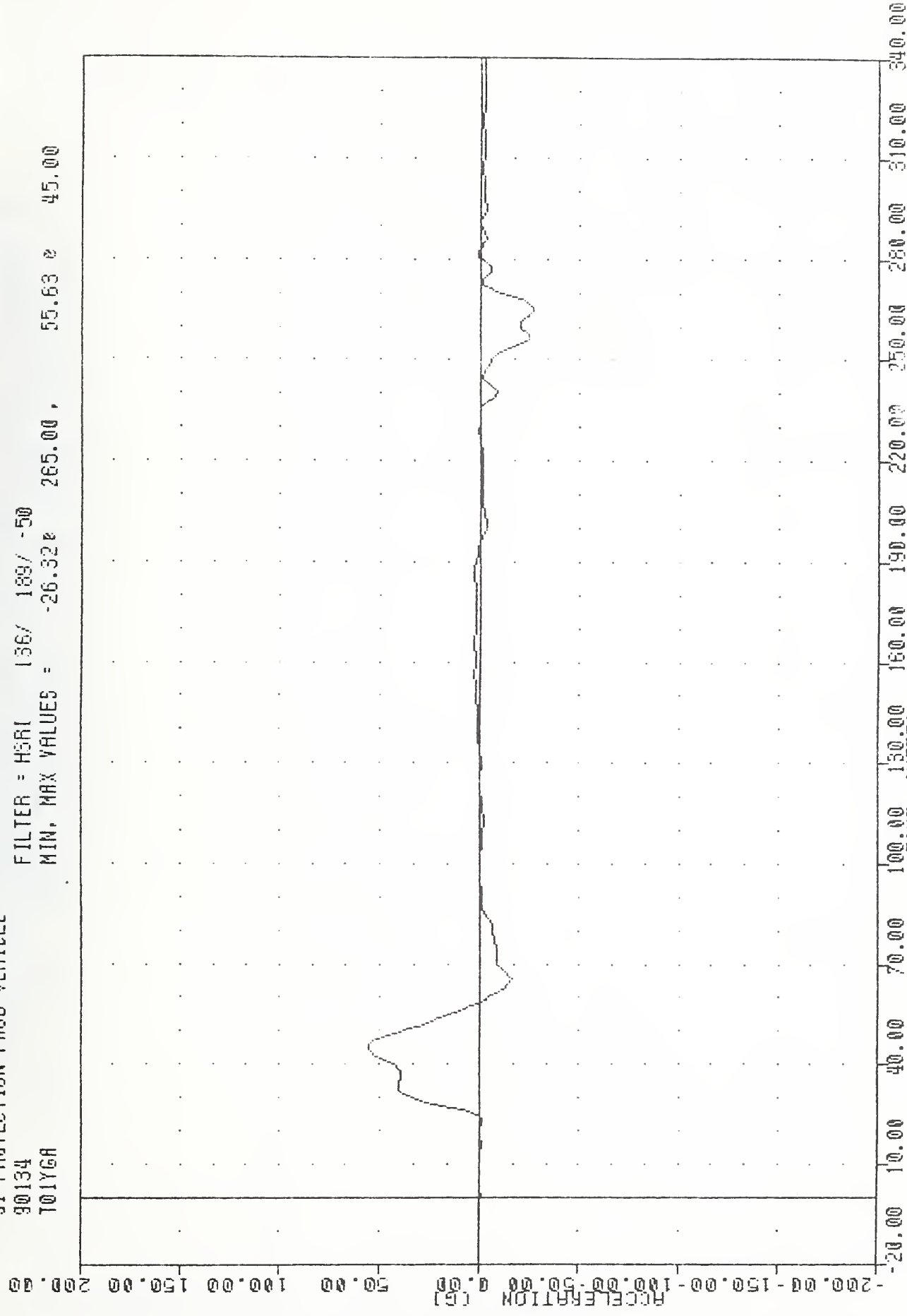
FILTER = ELPF 300/ 949/ -40  
MIN. MAX VALUES = -0.27e 25.63, 25.13 e 59.50



MOVING DEFORMABLE BARRIER INTO FORD TAURUS CENTRA  
DRIVER UPPER SPINE Y AXIS VELOCITY

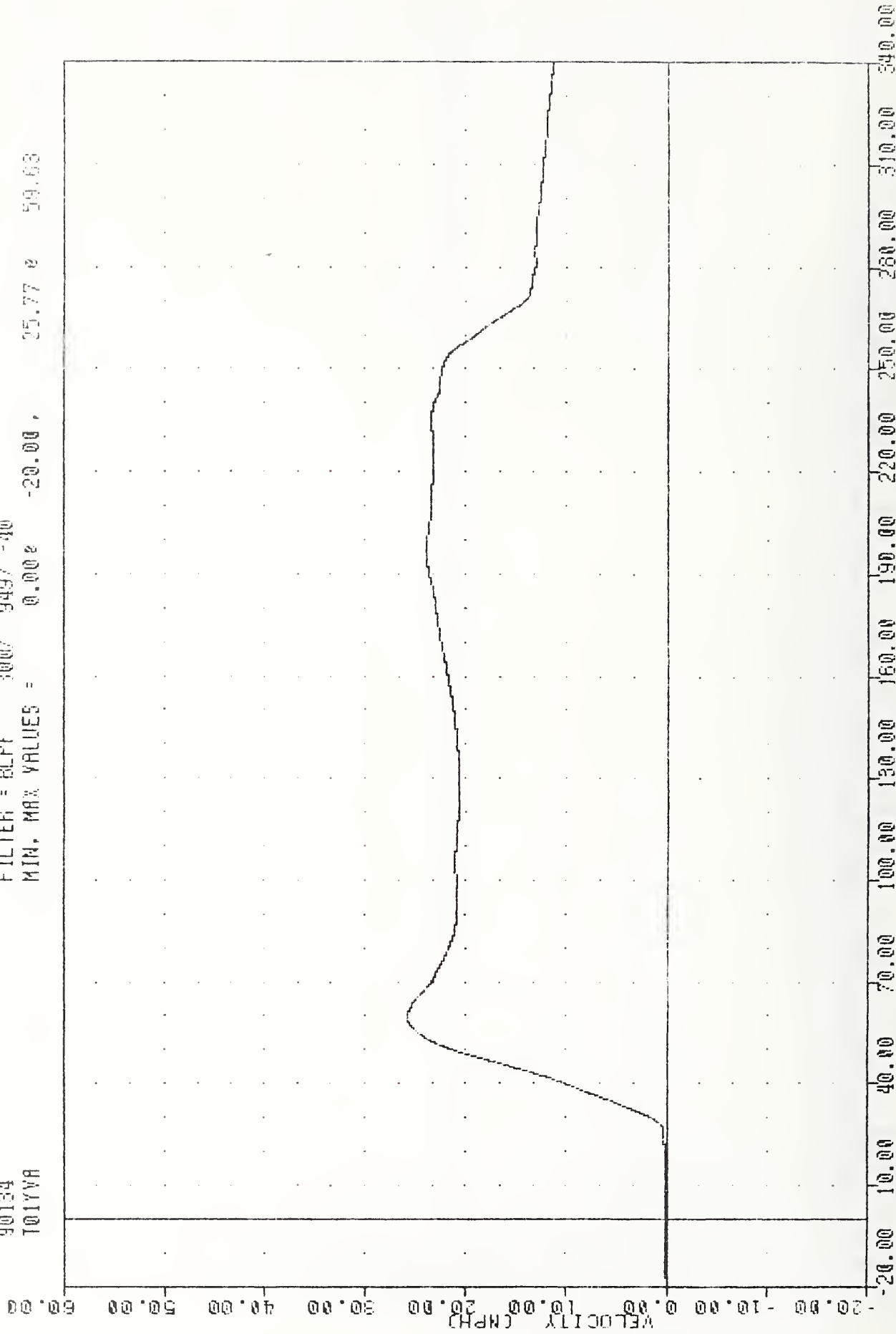
VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
T01YGA

FILTER = H&R 136/ 189/ -50  
MIN. MAX VALUES = -26.32e 265.00 , 55.63 e 45.00



VRATC , 900514  
 SI PROTECTION PROO VEHICLE  
 90134  
 T01YVA

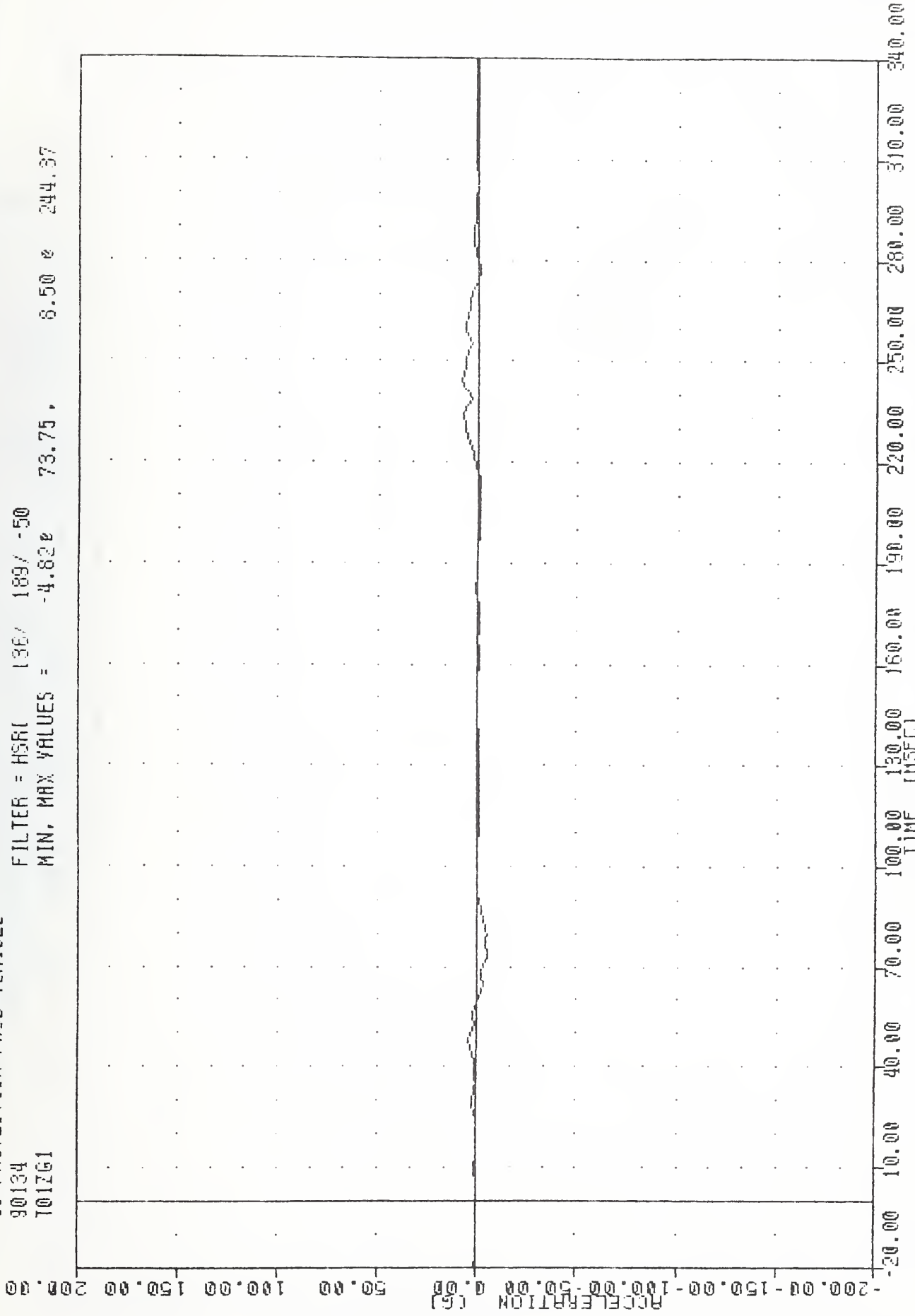
FILTER = BLPF 300/ 949/ -40  
 MIN. MAX VALUES = 0.00e -20.00 , 25.77 e 59.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS SENTRA  
 DRIVER UPPER SPINE Y AXIS REDUNDANT VELOCITY

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 T01ZG1

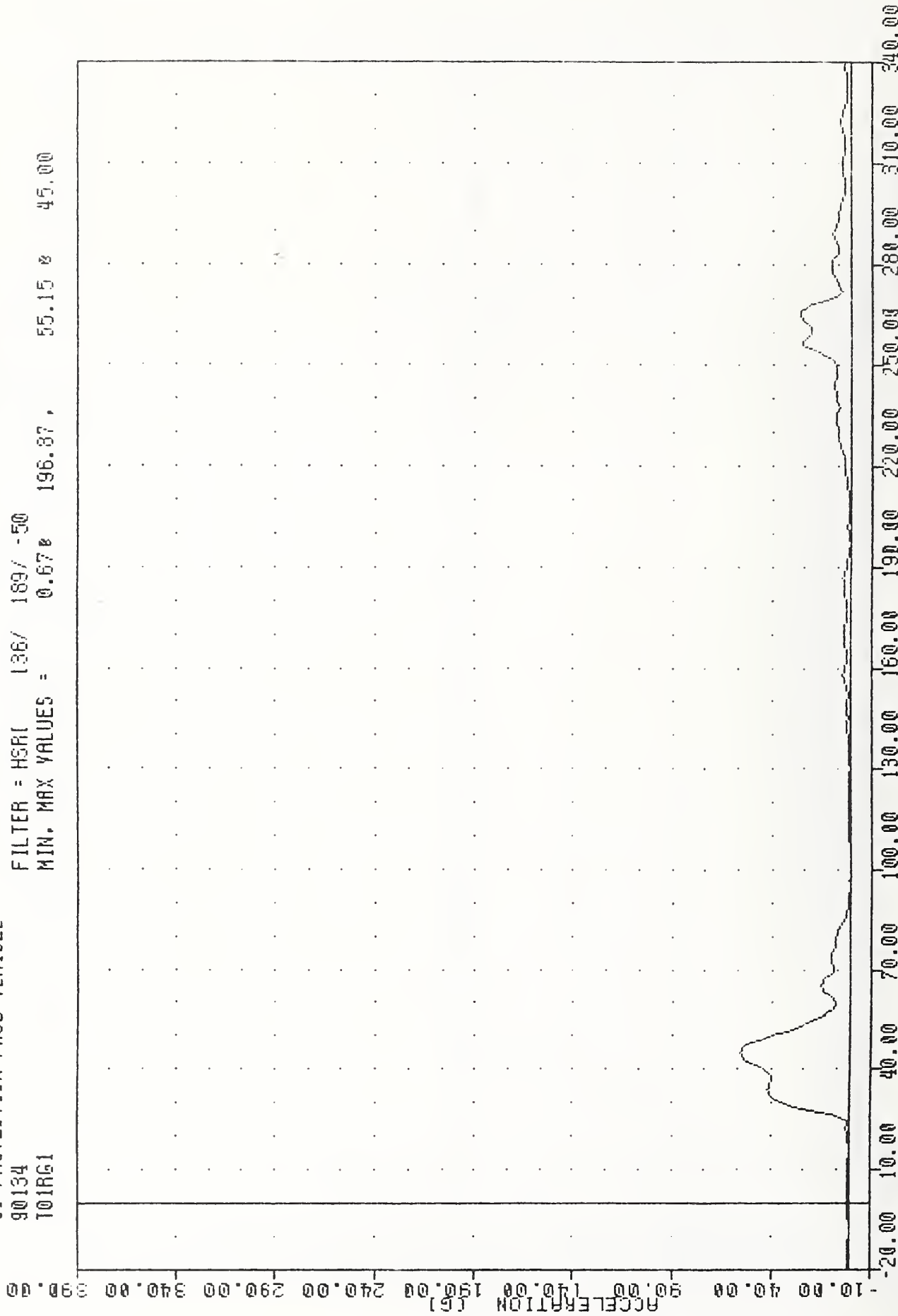
FILTER = HSRI 136/ 189/ -50  
 MIN, MAX VALUES = -4.82e 73.75, 8.50 e 244.37



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 DRIVER UPPER SPINE Z AXIS ACCELERATION

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 T01RG1

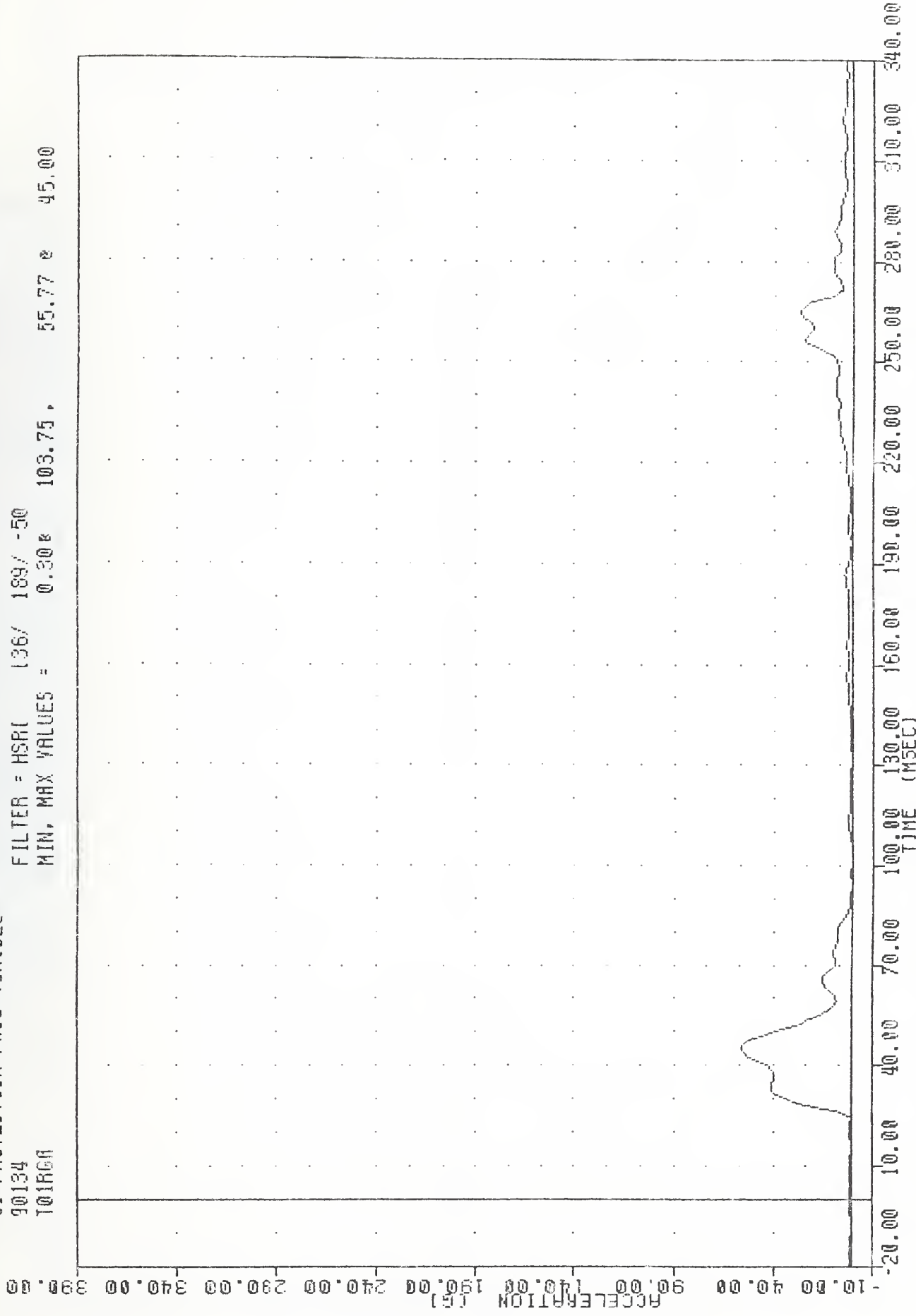
FILTER = HSRI 136/ 189/ -50  
 MIN. MAX VALUES = 0.67% 196.87 , 55.15 % 45.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 DRIVER UPPER SPINE RESULTANT ACCELERATION

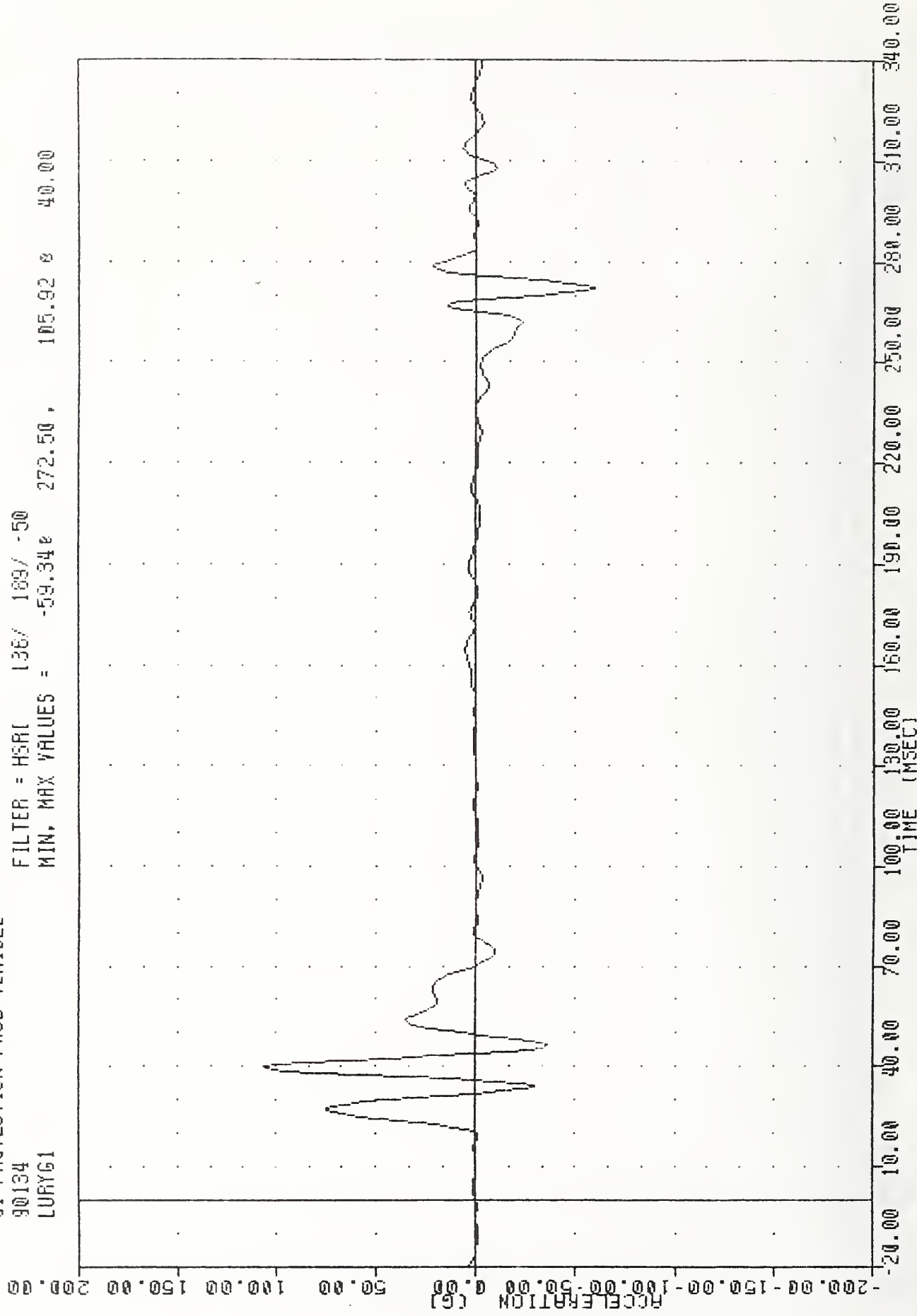
VRIC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
T01RCH

FILTER = HSR1 136/ 189/ -50  
MIN, MAX VALUES = 0.308 103.75 , 55.77 2 45.00



VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LURY61

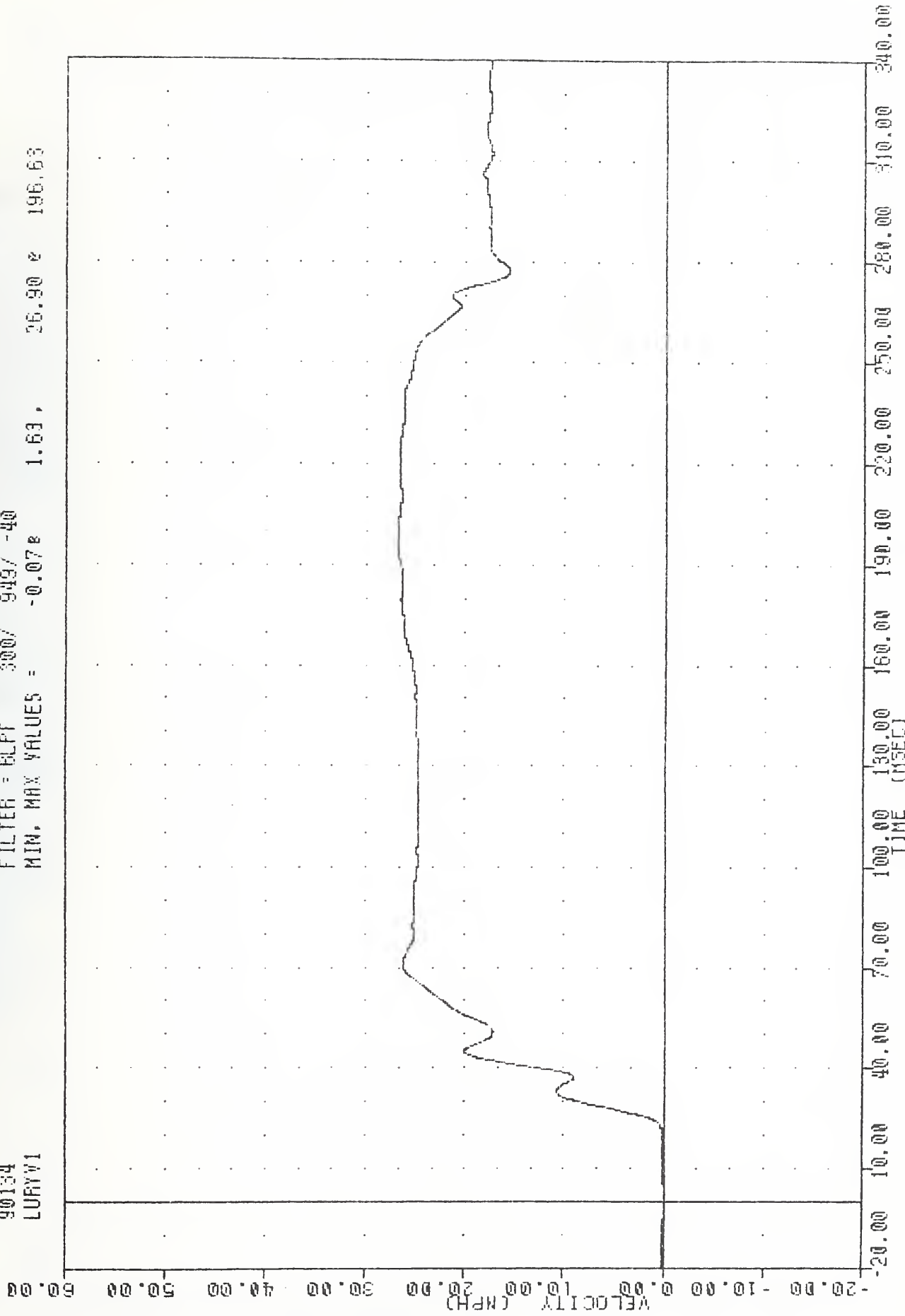
FILTER = HSR1 138/ 189/ -50  
MIN. MAX VALUES = -59.34e 272.50 , 105.92 e 40.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER LEFT UPPER THORAX PIB Y AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION PASS VEHICLE  
90134  
LURYV1

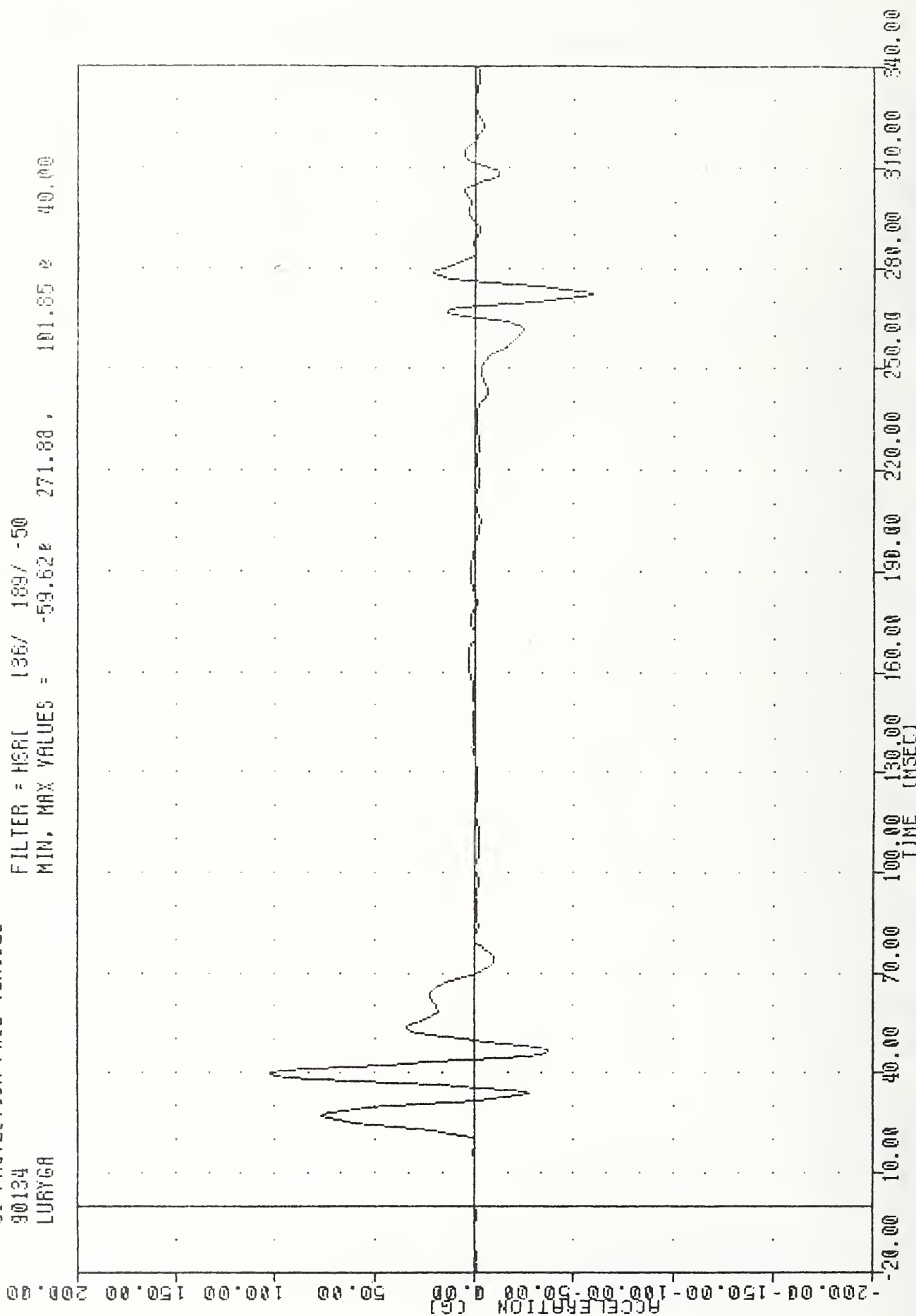
FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -0.072 1.63, 26.90 2 196.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS SENTRA  
DRIVER LEFT UPPER THORAX RIB Y AXIS VELOCITY

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LURYGA

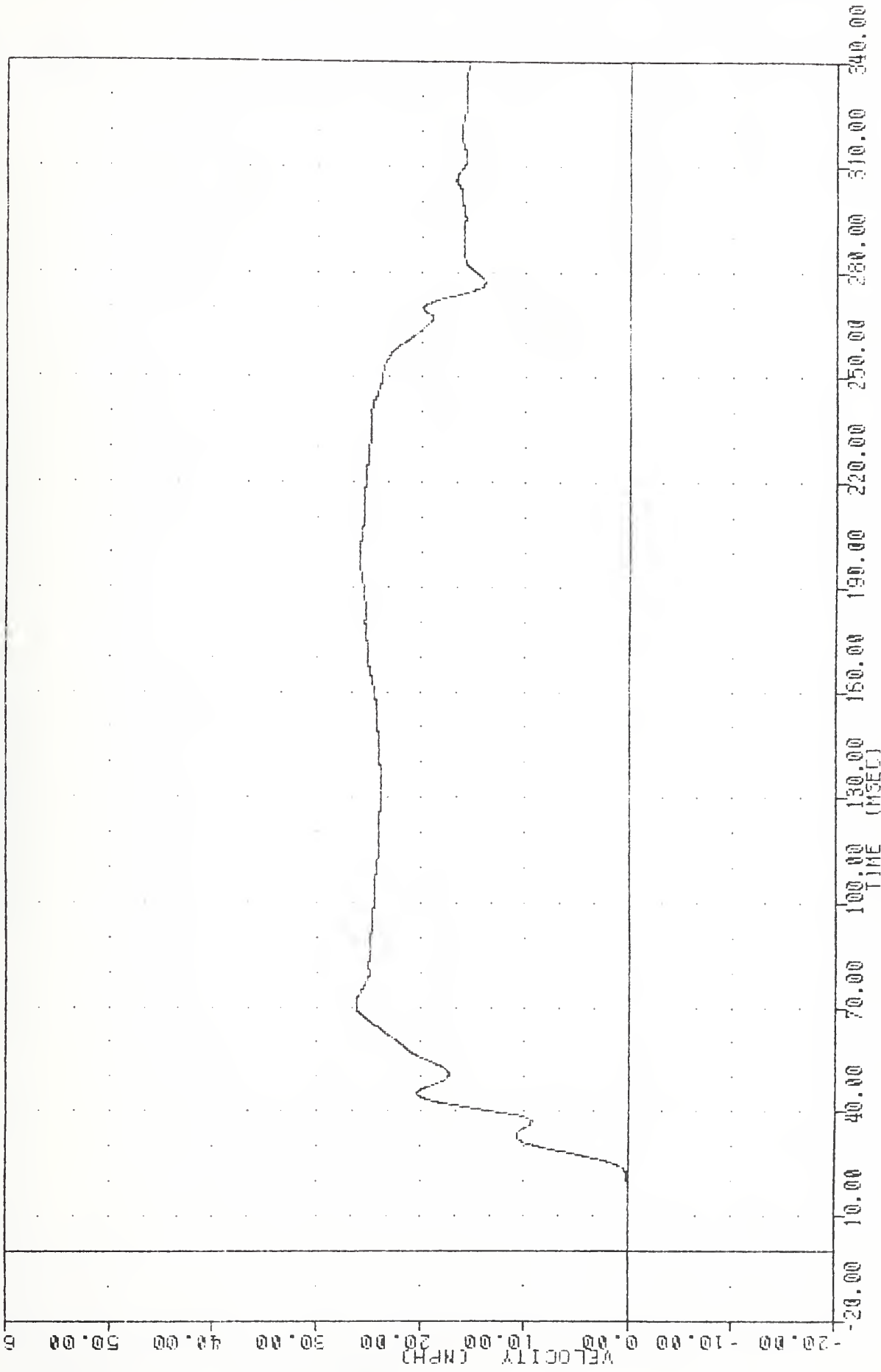
FILTER = HGRI 136/ 189/ -50  
MIN, MAX VALUES = -59.62 271.88 , 101.85 2 40.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER LEFT UPPER THORAX ATB Y AXIS REDUNDANT ACCELERATION

VRTC , 900514  
SI PROTECTION FROM VEHICLE  
90134  
LURYVA

FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -0.032 10.83 26.29 71.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS SENTRA  
DRIVER LEFT UPPER THORAX AIR V AYS REDUNDANT VELOCITY

VNTC , 900514

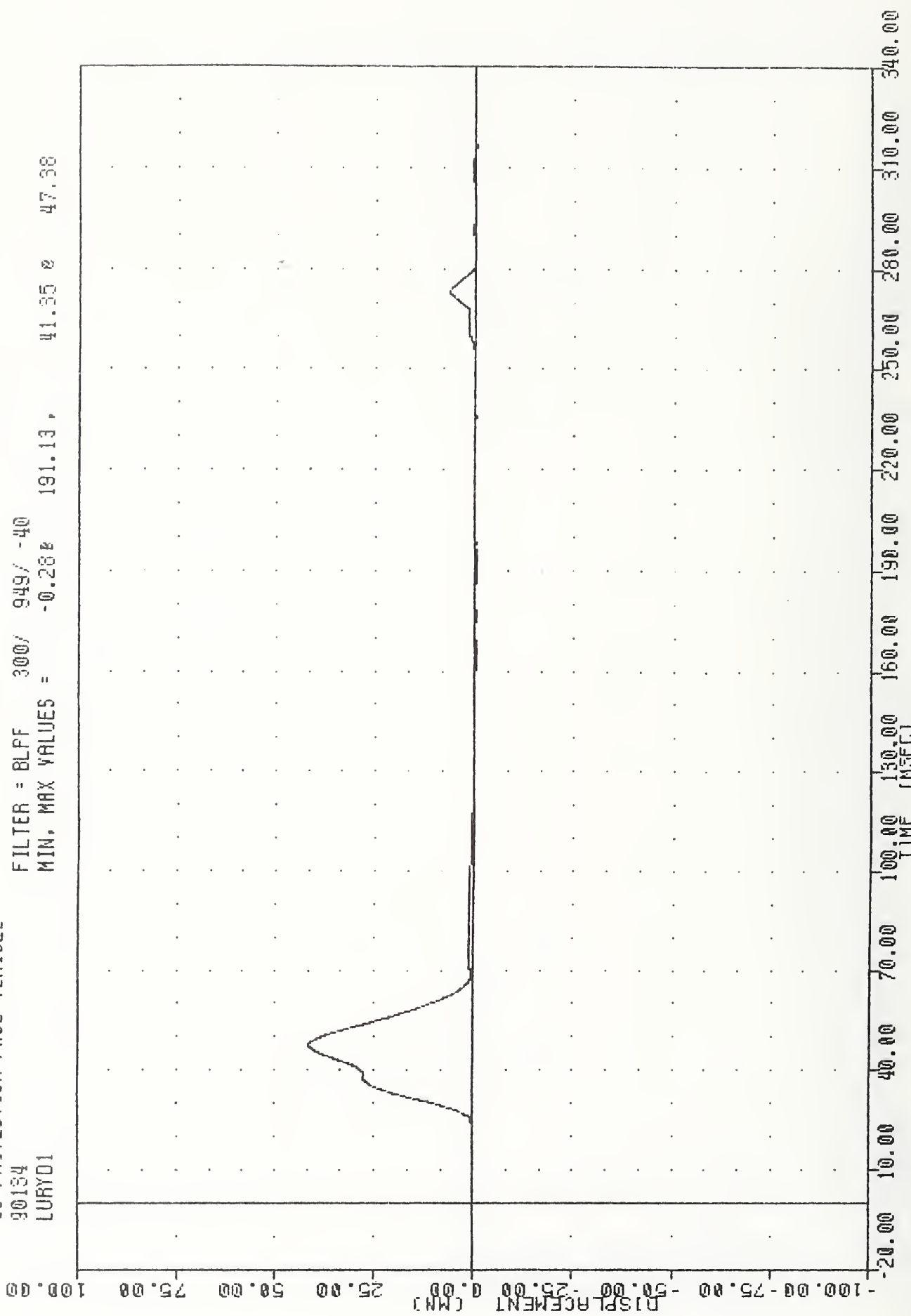
SI PROTECTION PROD VEHICLE

90134

LURY01

FILTER = BLPF 300/ 949/ -40

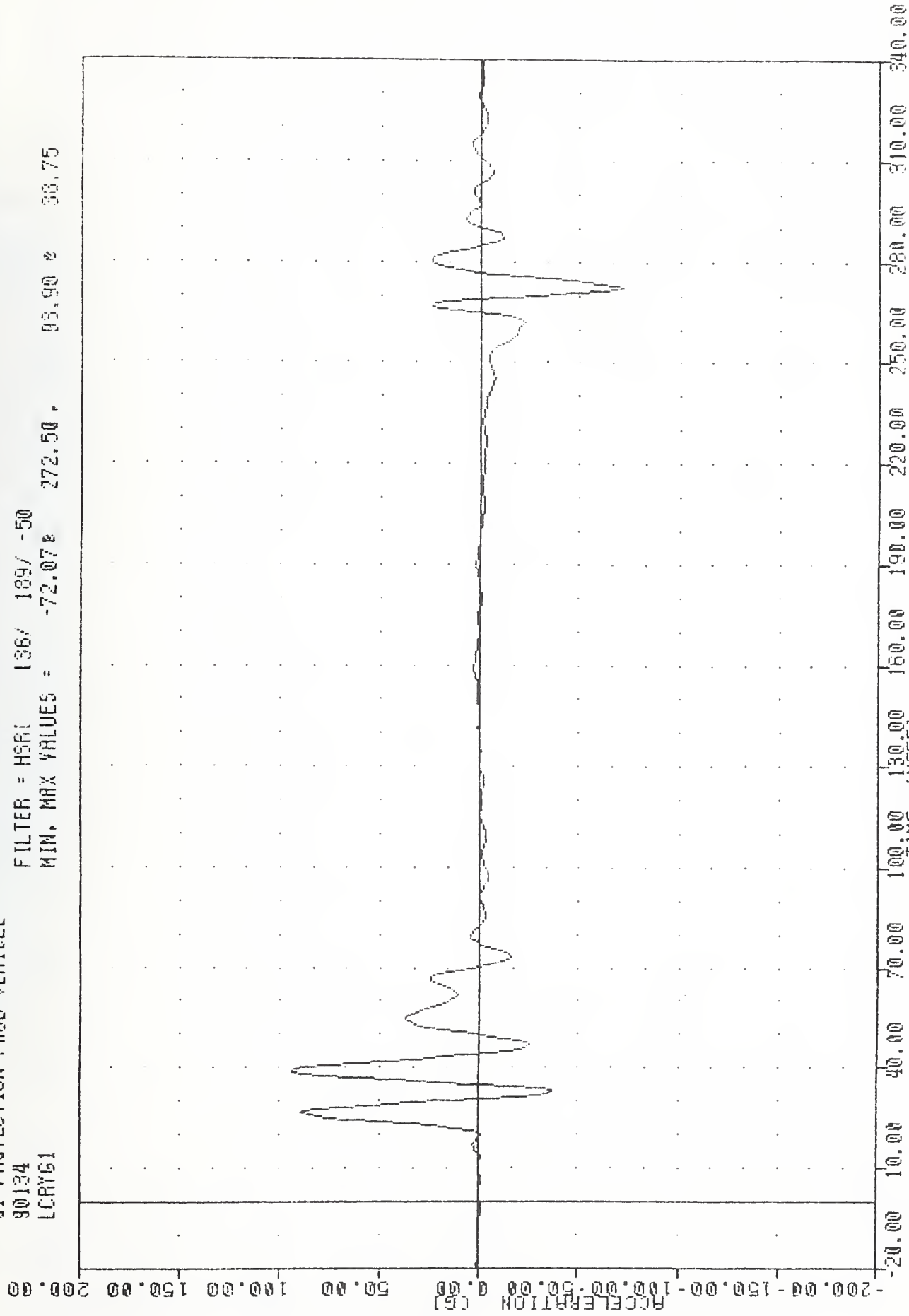
MIN, MAX VALUES = -0.28 191.13, 41.35 47.38



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER LEFT UPPER THORAX RIB DISPLACEMENT

VRTC  
SI PROTECTION PRAD VEHICLE  
90134  
LCRY61

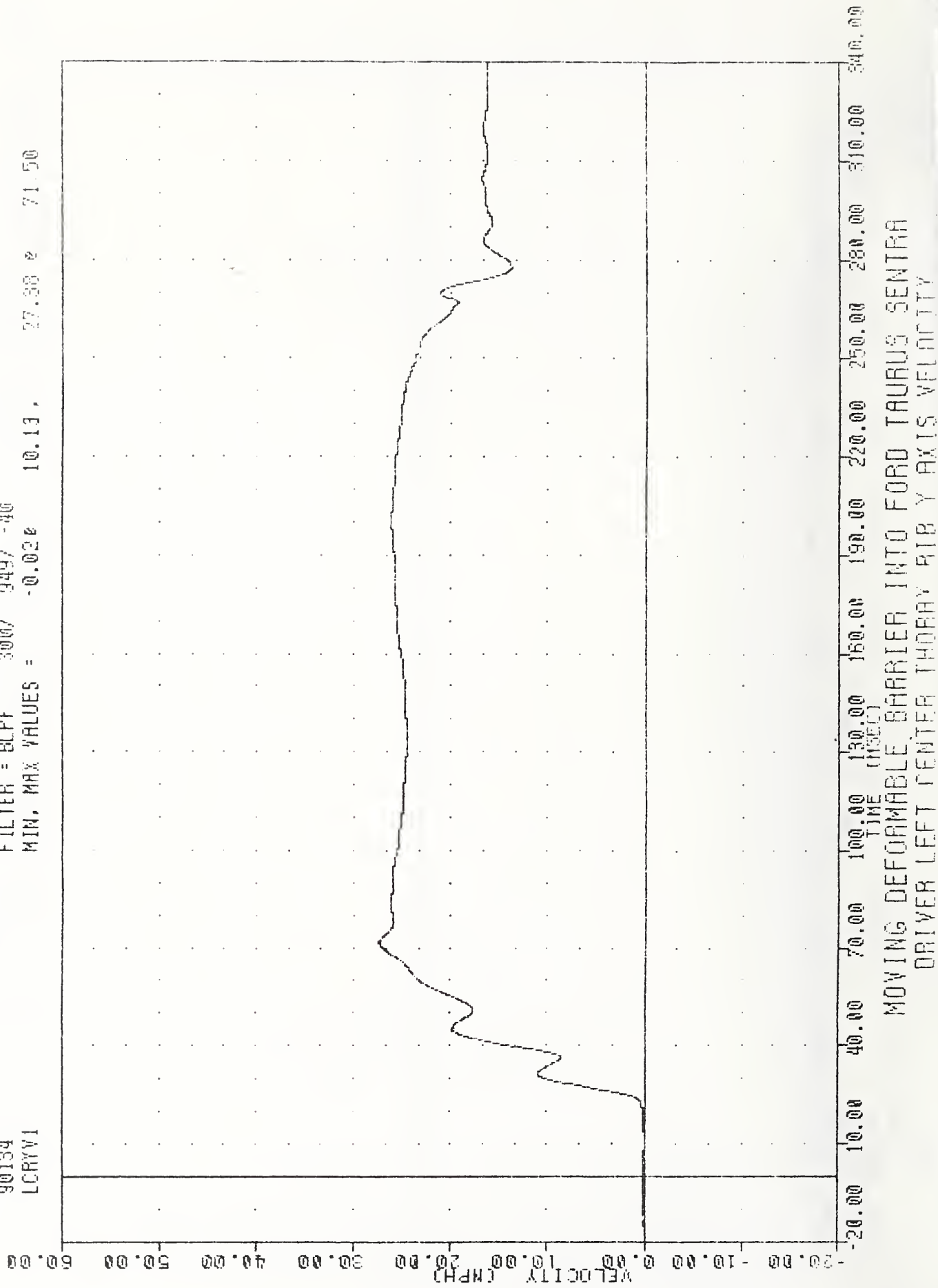
FILTER = HSR1 136/ 189/ -50  
MIN. MAX VALUES = -72.07% 272.50% 93.90% 38.75



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER LEFT CENTER THORAX RIB Y AXIS ACCELERATION

NRTC , 900514  
SI PROTECTION PASS VEHICLE  
90134  
LCRYV1

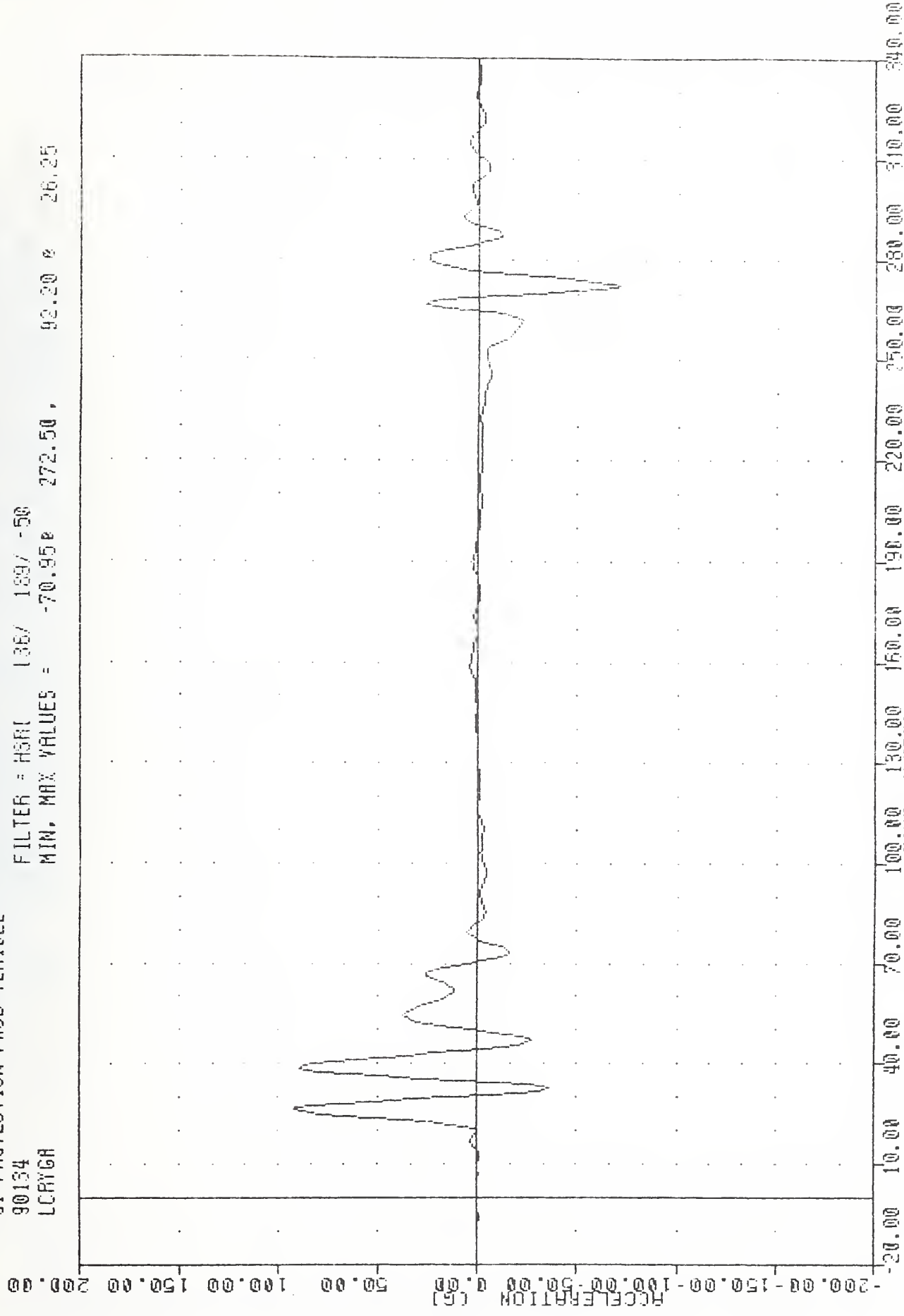
FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -0.020 10.13, 27.30 2 71.50



MOVING DEFORMABLE BARRIER INTO FORD TAURUS SENTRA  
DRIVER LEFT CENTER THORAX RIB Y AXIS VELOCITY

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LCRYGR

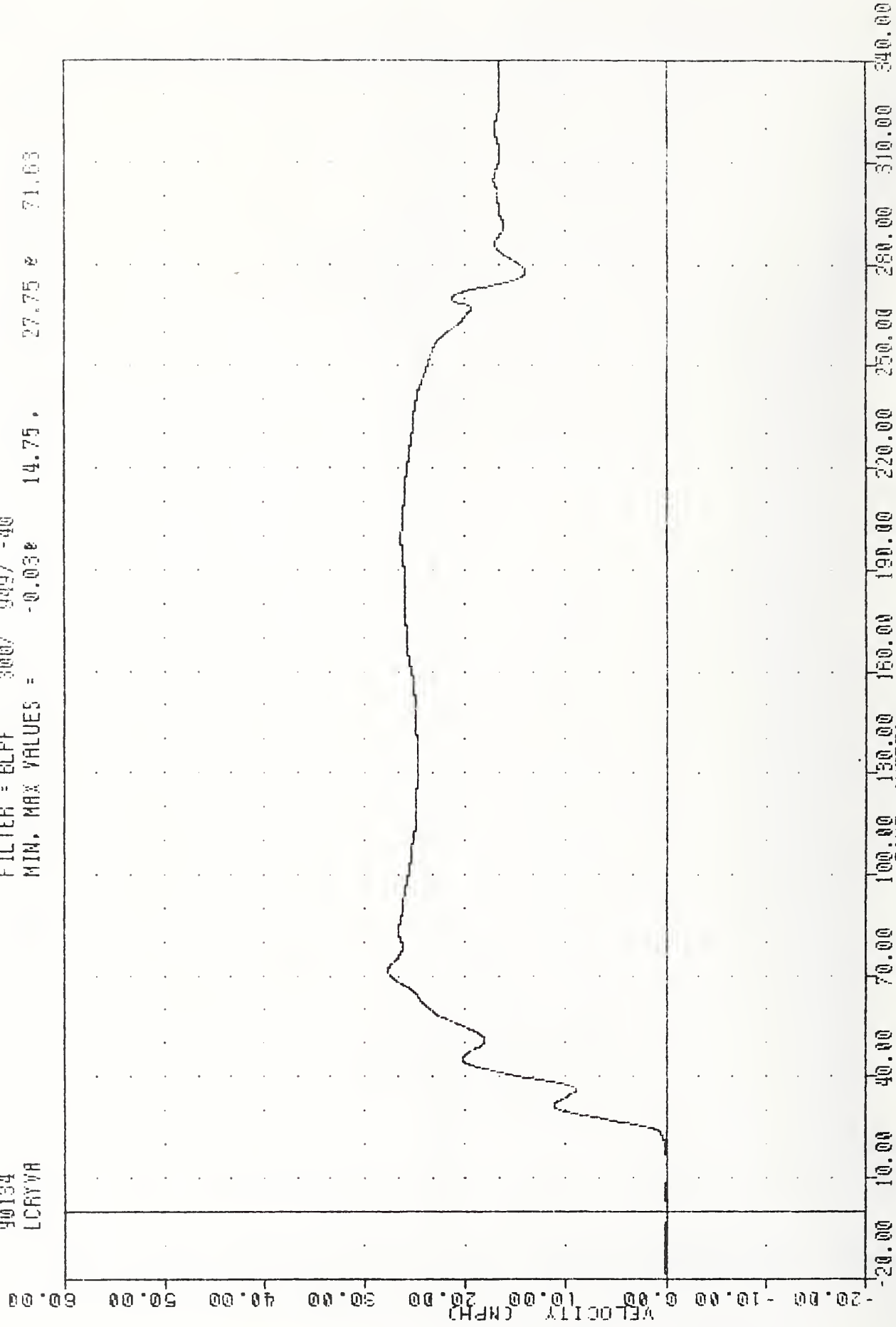
FILTER = HSRU 135/ 189/ -50  
MIN. MAX VALUES = -70.95e 272.50 , 92.20 e 26.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER LEFT CENTER THORAX RIB Y AXIS REDUNDANT ACCELERATION

VRTC , 900514  
SI PROTECTION PASS VEHICLE  
90134  
LCRYVA

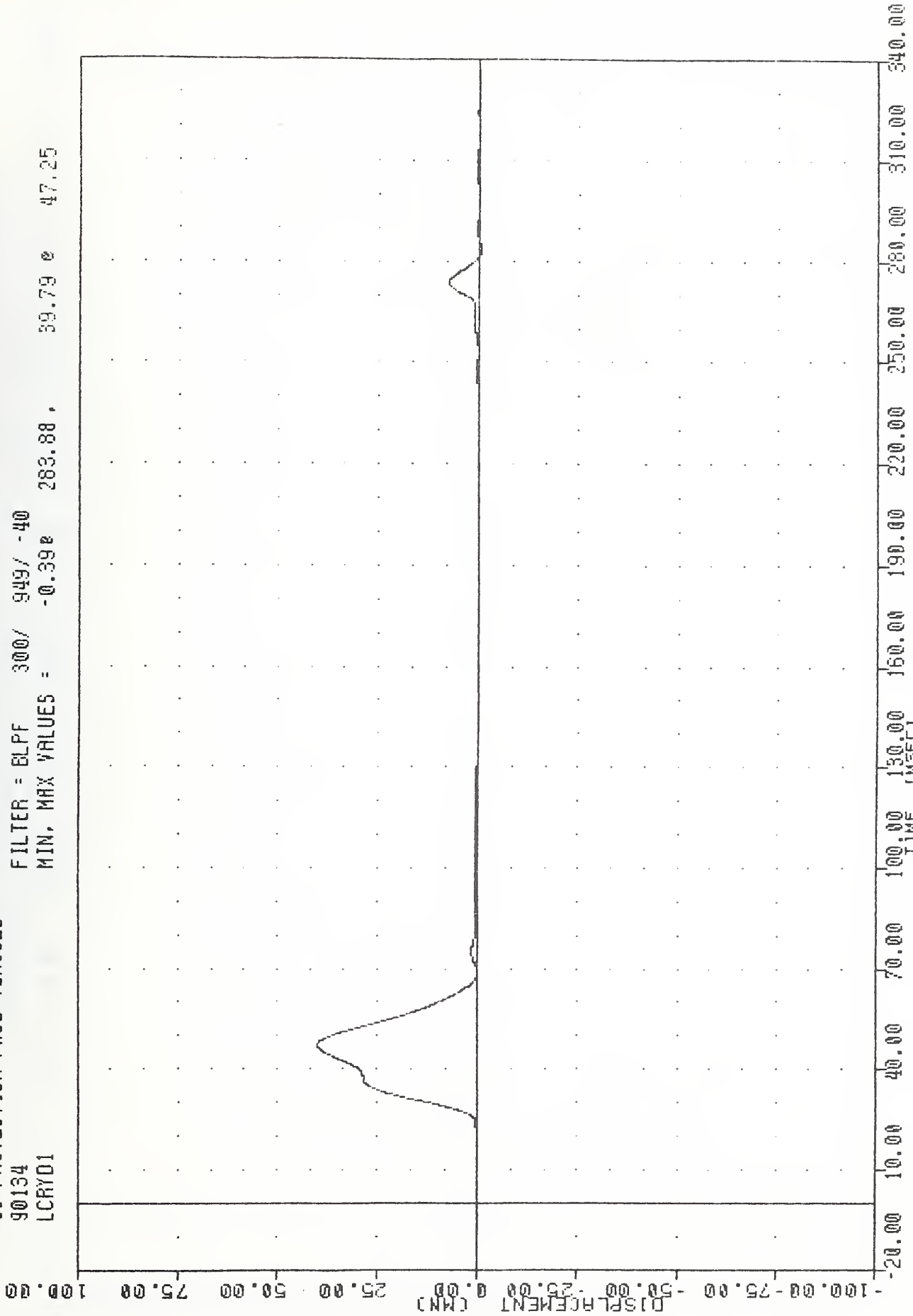
FILTER = BLPF 300/ 999/ -40  
MIN. MAX VALUES = -0.030 14.75 27.75 71.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS SENTA  
DRIVER LEFT CENTER THORAX AIR Y AXIS REDUNDANT VELOCITY

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LCRYD1

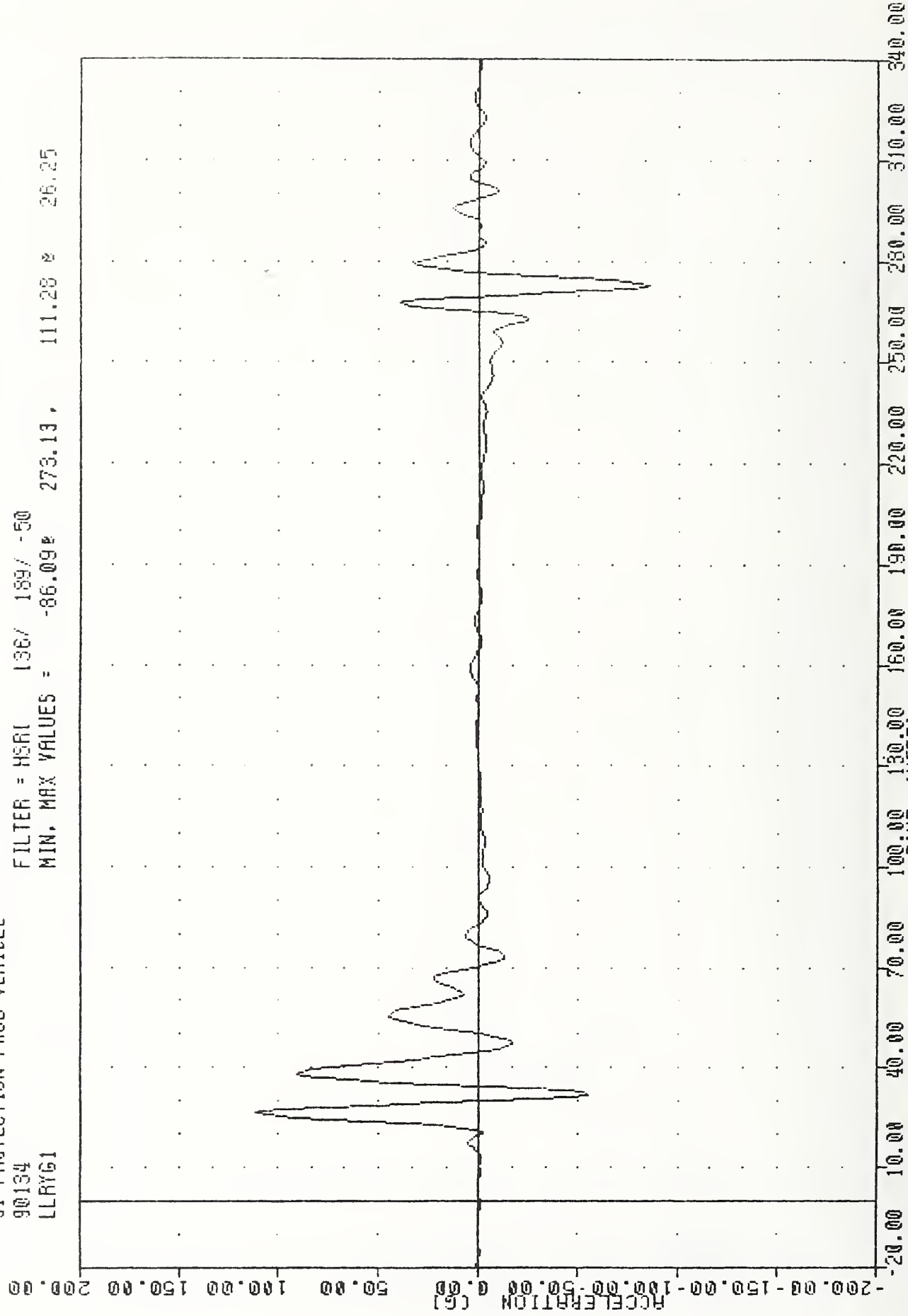
FILTER = BLPF 300/ 949/ -40  
MIN, MAX VALUES = -0.390 283.88 , 39.79 0 47.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER LEFT CENTER THORAX RIB DISPLACEMENT

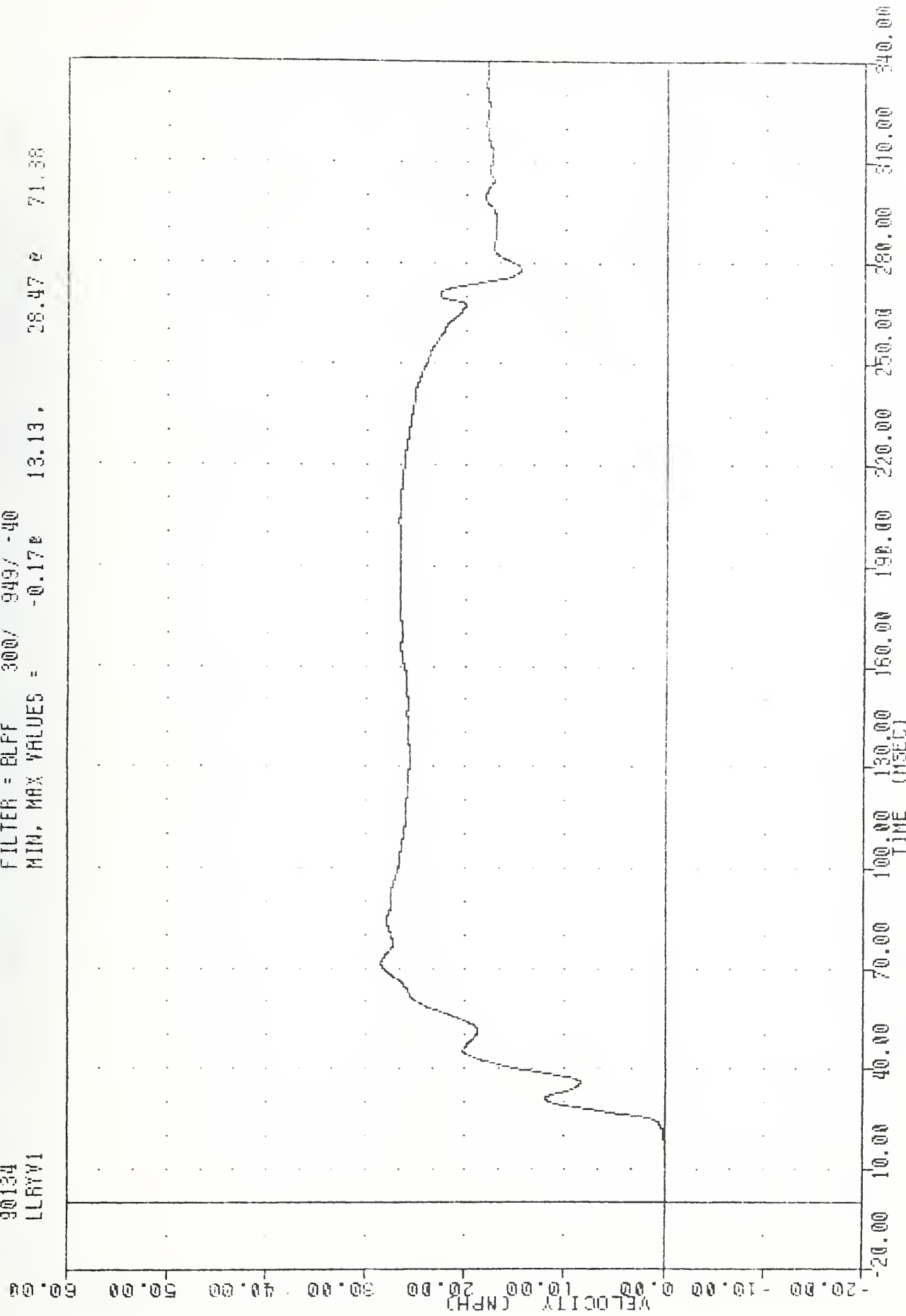
VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LLRYG1

FILTER = HSRI 136/ 139/ -50  
MIN. MAX VALUES = -86.09% 273.13, 111.28 % 26.25



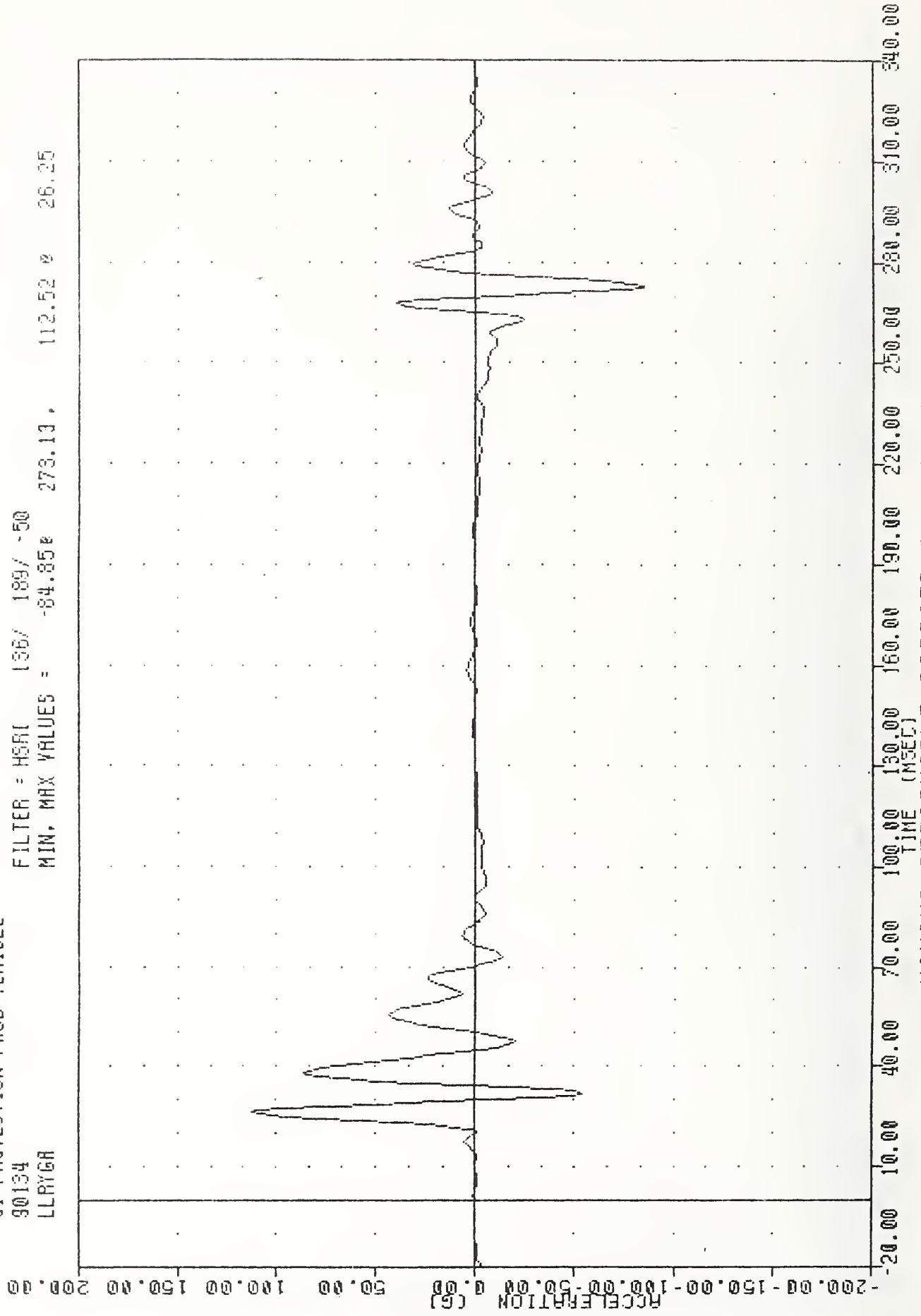
VR7C , 900514  
SI PROTECTION PASO VEHICLE  
90134  
LLRTV1

FILTER = BLFF 3000/ 949/ -40  
MIN, MAX VALUES = -0.170 13.13, 28.47 e 71.38



VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LLRYGR

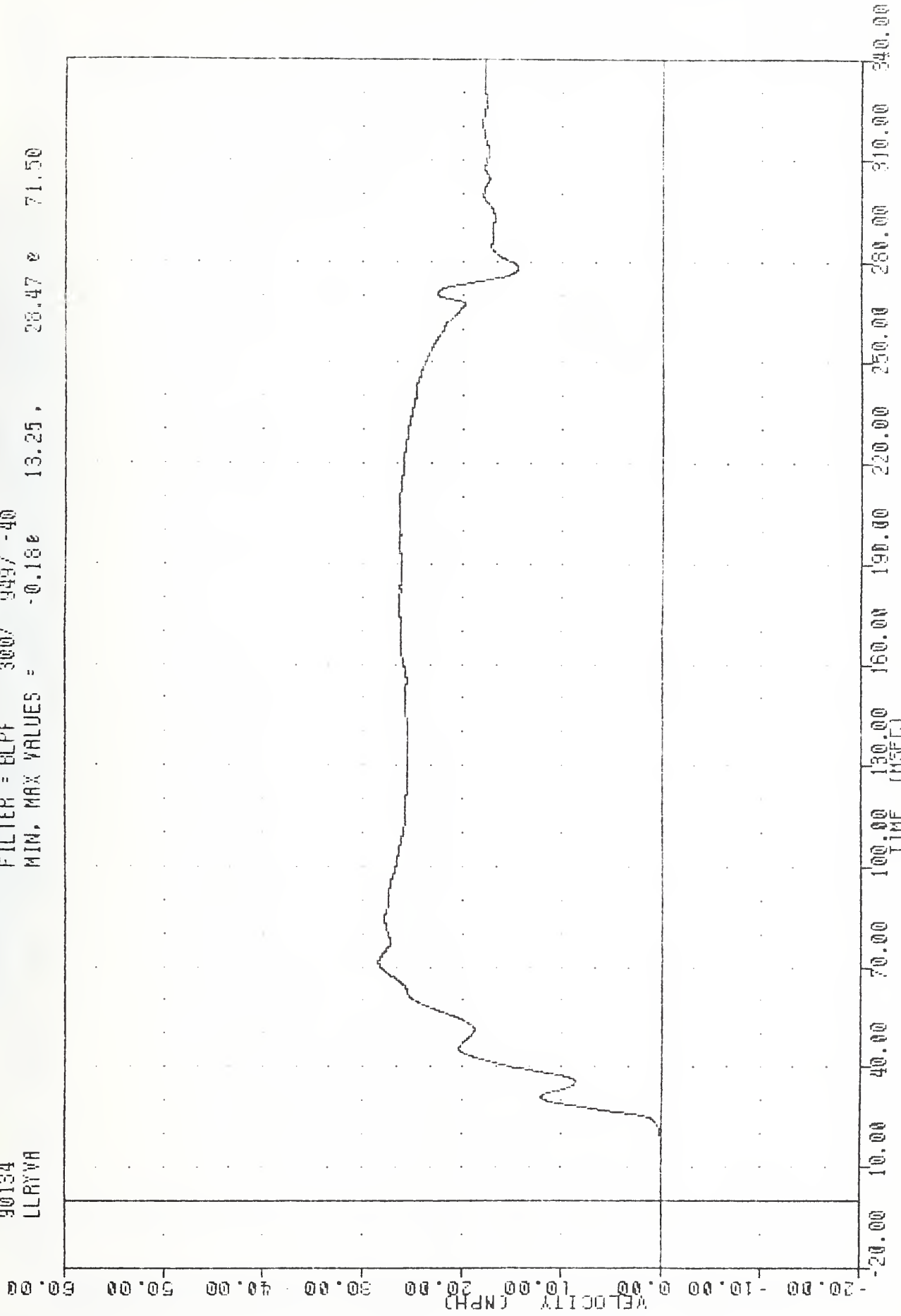
FILTER = HSR 136/ 189/ -50  
MIN, MAX VALUES = -84.85% 273.13, 112.52% 26.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER LEFT LOWER THORAX ATB Y AXIS REDUNDANT ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LLRYVA

FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -0.180 13.25 , 28.47 0 71.50

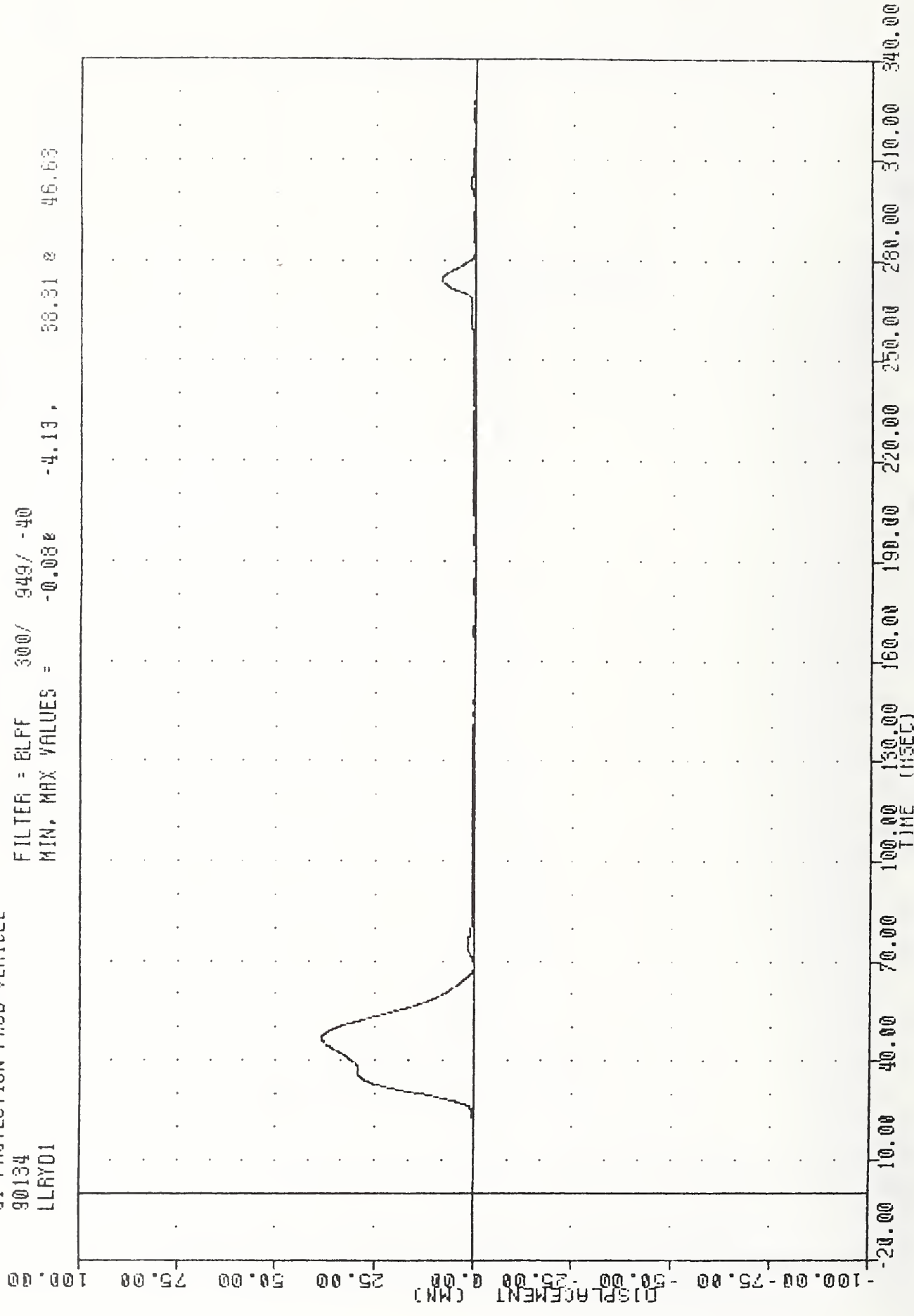


MOVING DEFORMABLE BARRIER INTO FORD TAURUS SENTRA  
DRIVER LEFT LOWER THORAX RIB Y AXIS REDUNDANT VELOCITY

VRTC, 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 LLRYD1

FILTER = BLFF 300/ 949/ -40  
 MIN. MAX VALUES = -0.08e

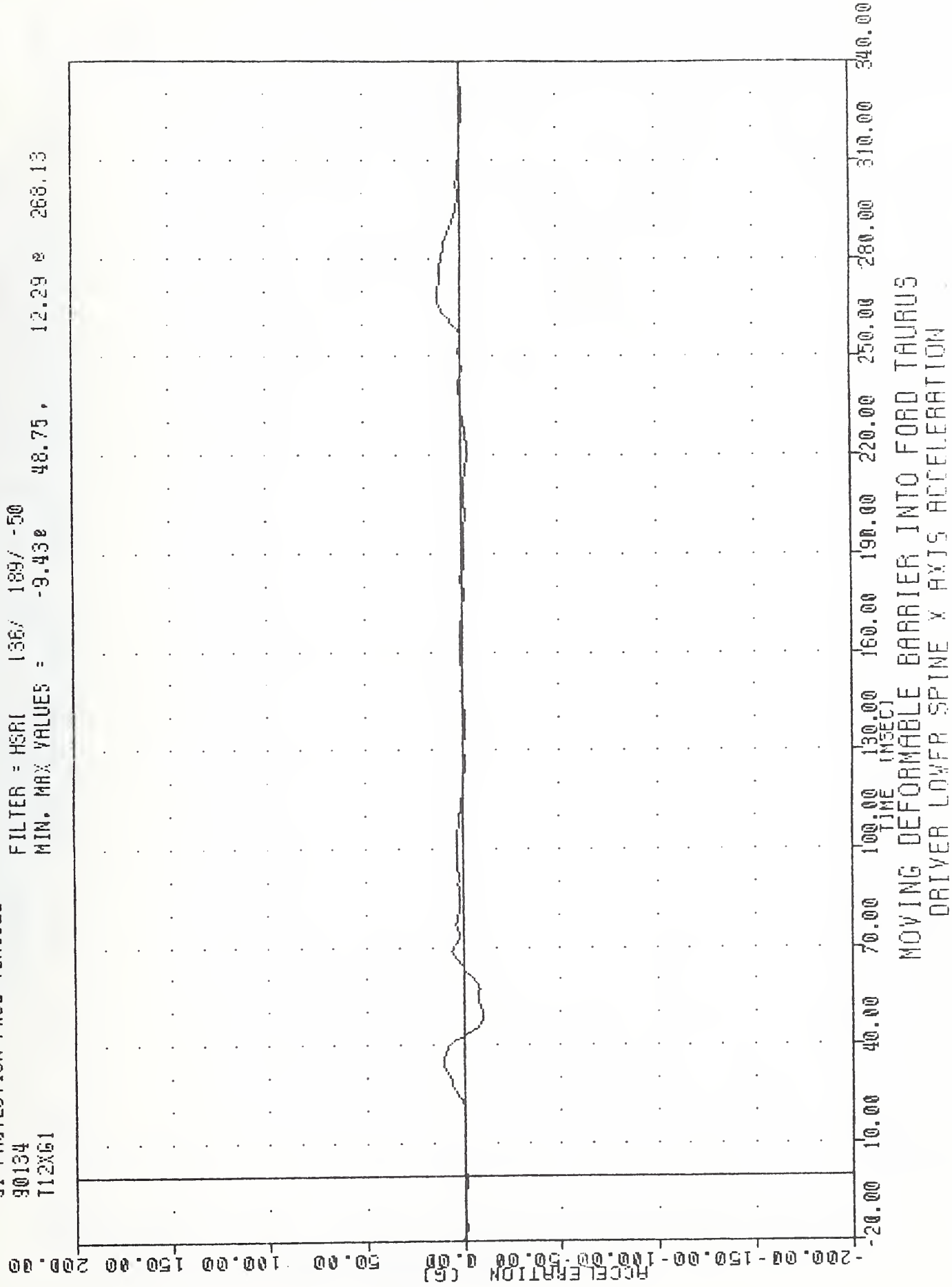
-4.13, 38.31 e 46.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 DRIVER LEFT LOWER THORAX AIR DISPLACEMENT

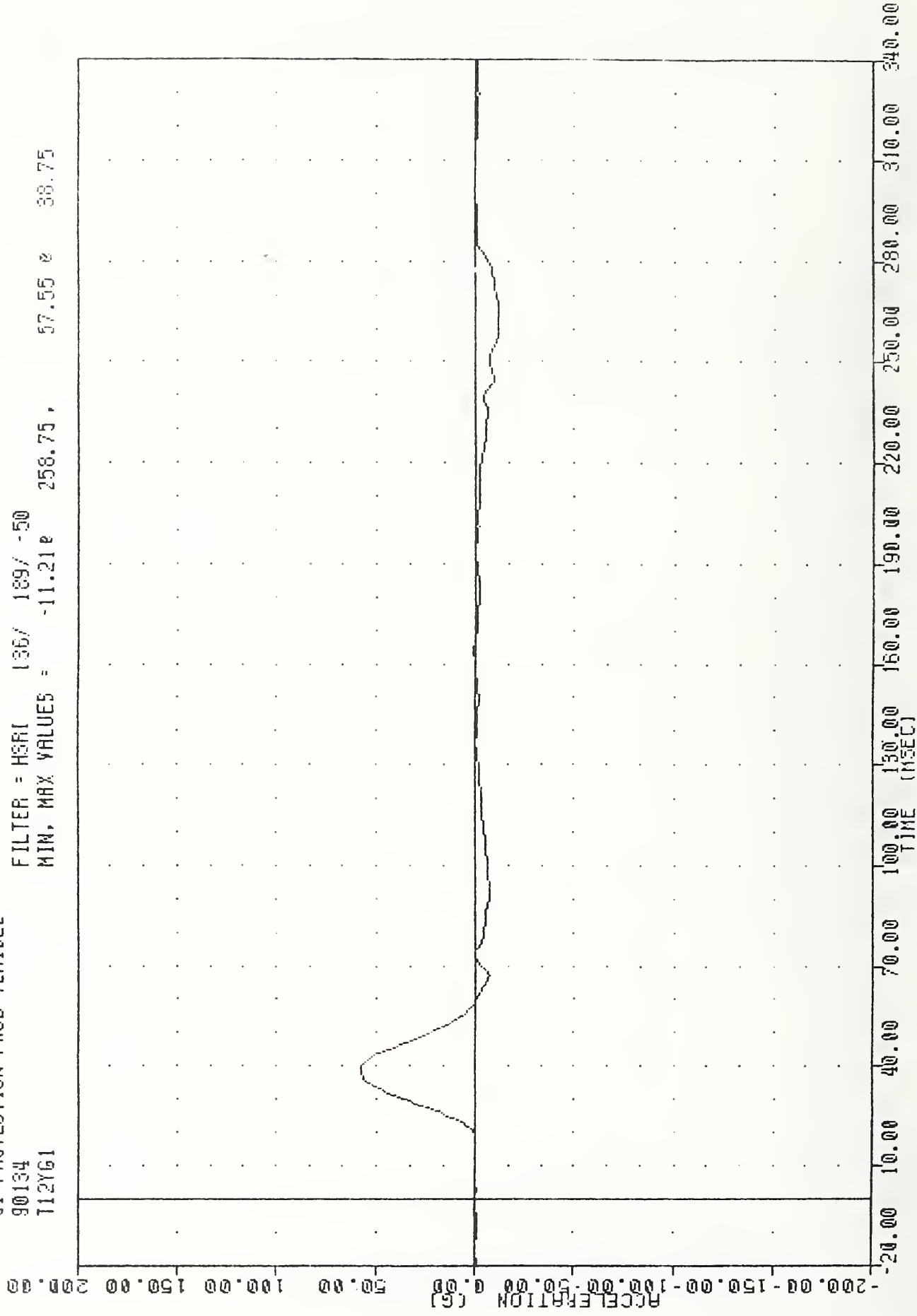
VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
T12XG1

FILTER = HSRI 136/ 189/ -50  
MIN. MAX VALUES = -9.43e 48.75 , 12.29 e 268.13



NRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 T12Y61

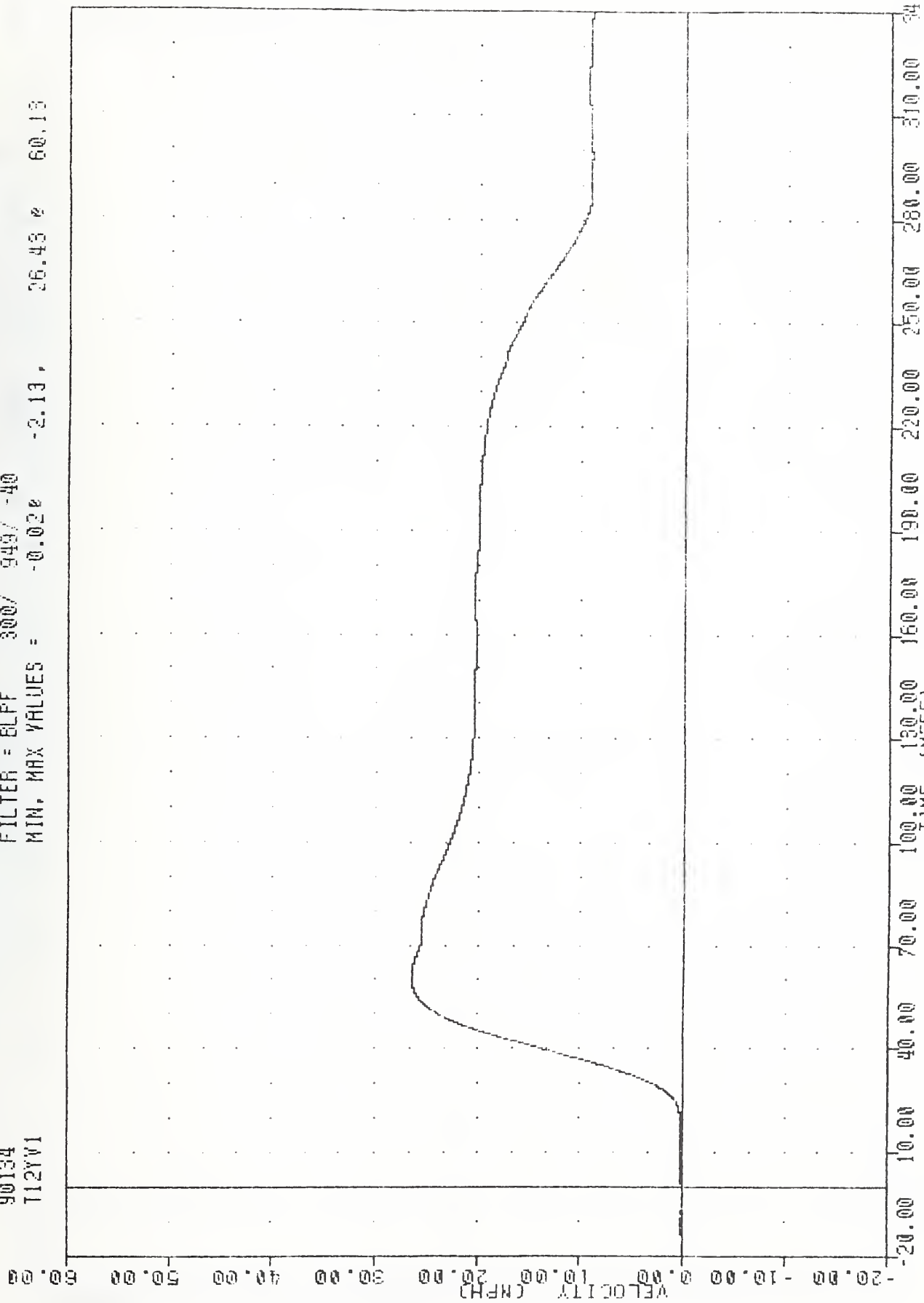
FILTER = H3R1 136/ 189/ -50  
 MIN, MAX VALUES = -11.21e 258.75, 57.55 e 38.75



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 DRIVER LOWER SPINE Y AXIS ACCELERATION

VRTC , 980514  
SI PROTECTION PADD VEHICLE  
90134  
112YV1

FILTER = BLPF 300/ 949/ -40  
MIN, MAX VALUES = -0.020 -2.13, 26.43 60.13

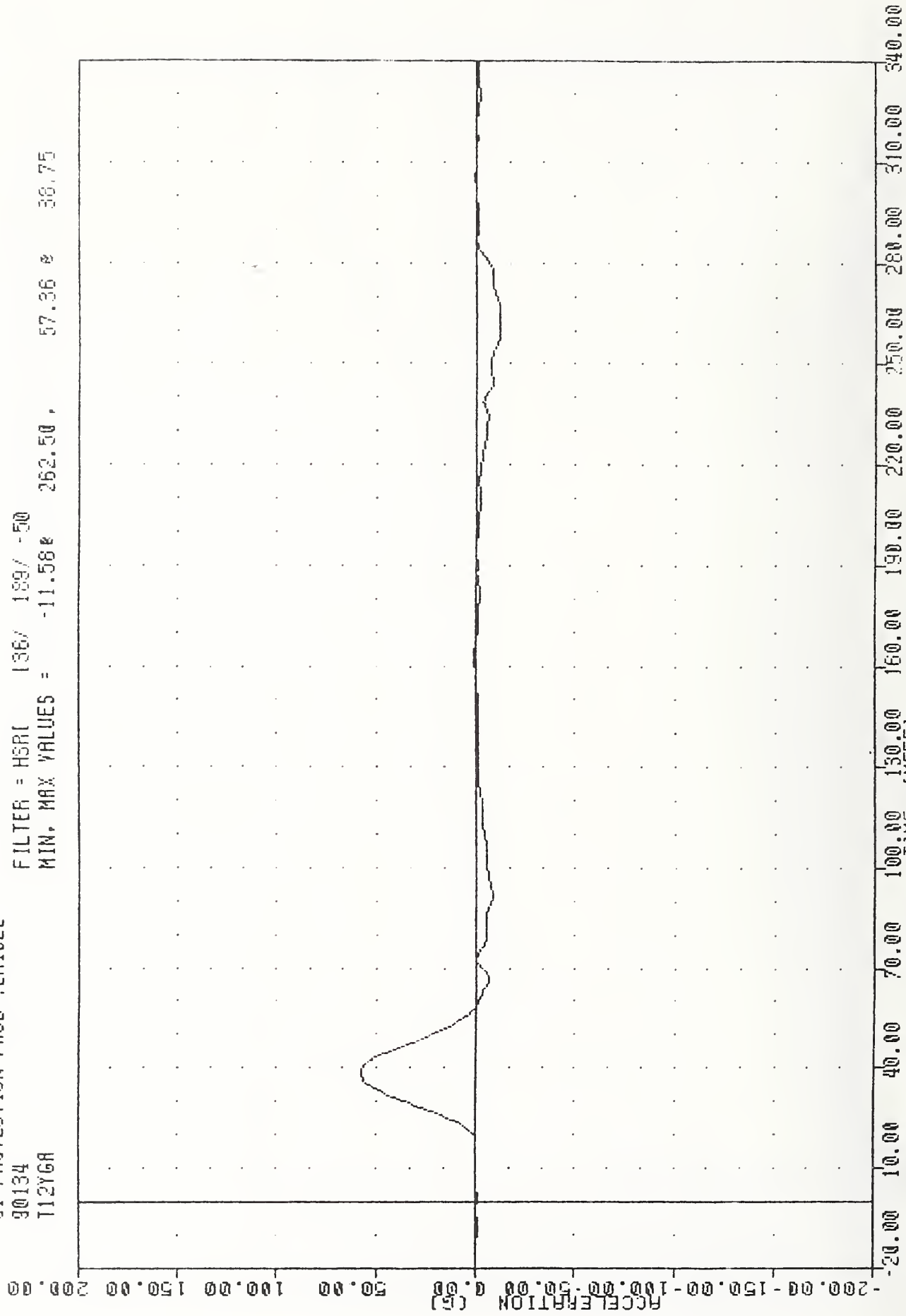


MOVING DEFORMABLE BARRIER INTO FORD TAURUS SENTRA  
DRIVER LOWER SPINE Y AXIS VELOCITY

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 T12Y6R

FILTER = HSR1 136/ 189/ -50  
 MIN, MAX VALUES = -11.58% 262.50 ,

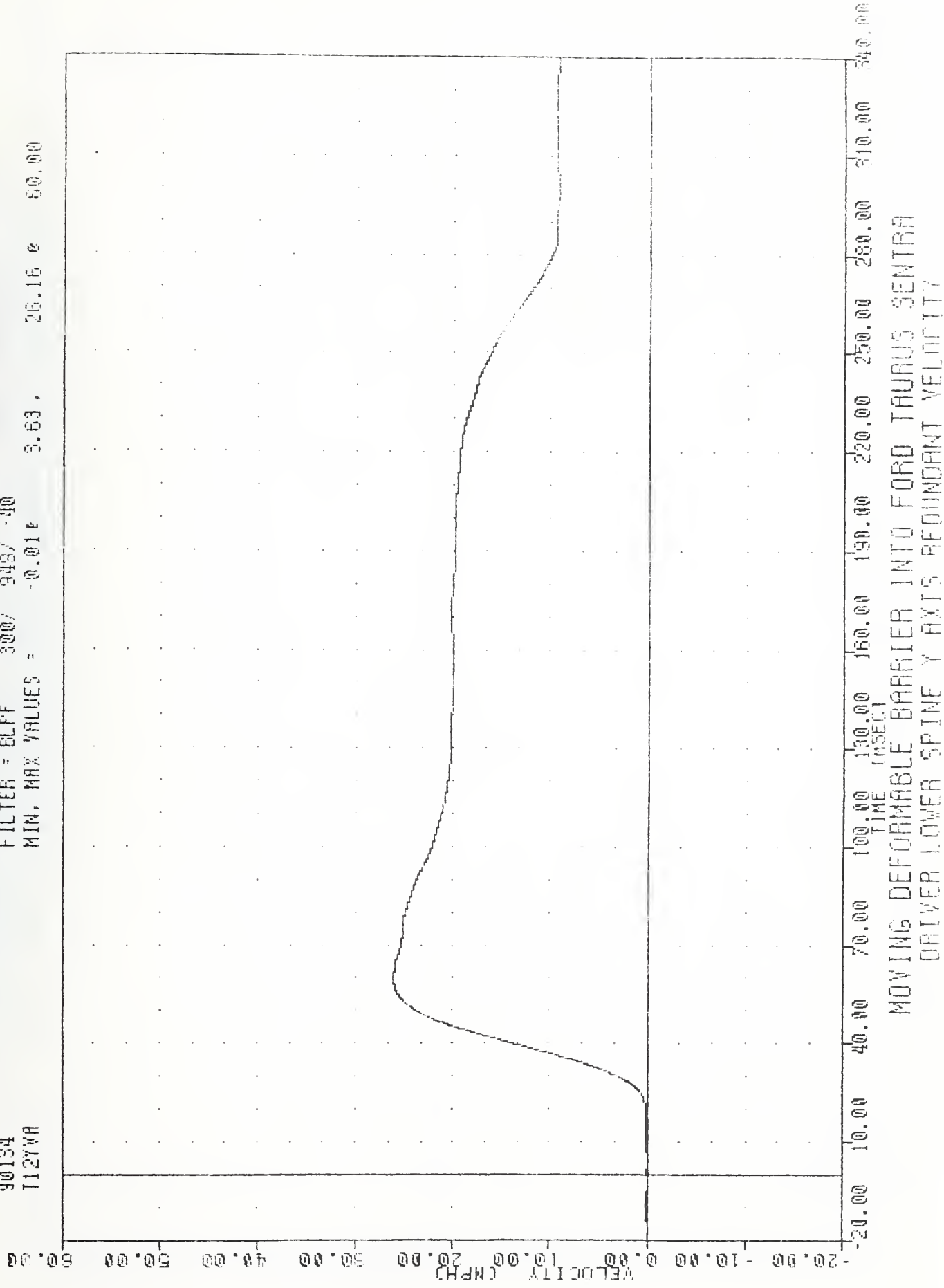
57.36 % 36.75



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 DRIVER LOWER SPINE Y AXIS REDUNDANT ACCELERATION

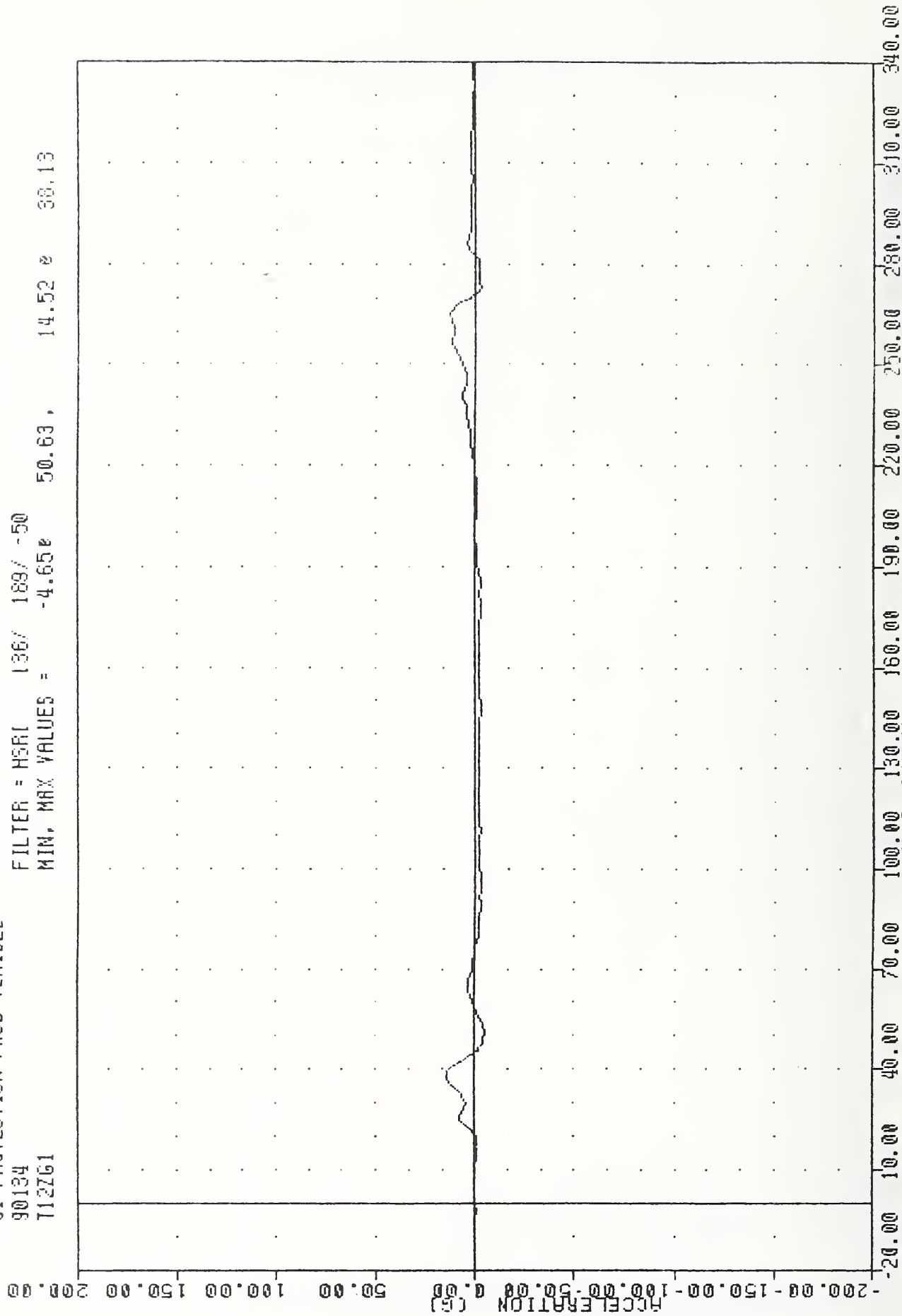
VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
T12YVA

FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -0.012 3.63 26.16 60.00



VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 712761

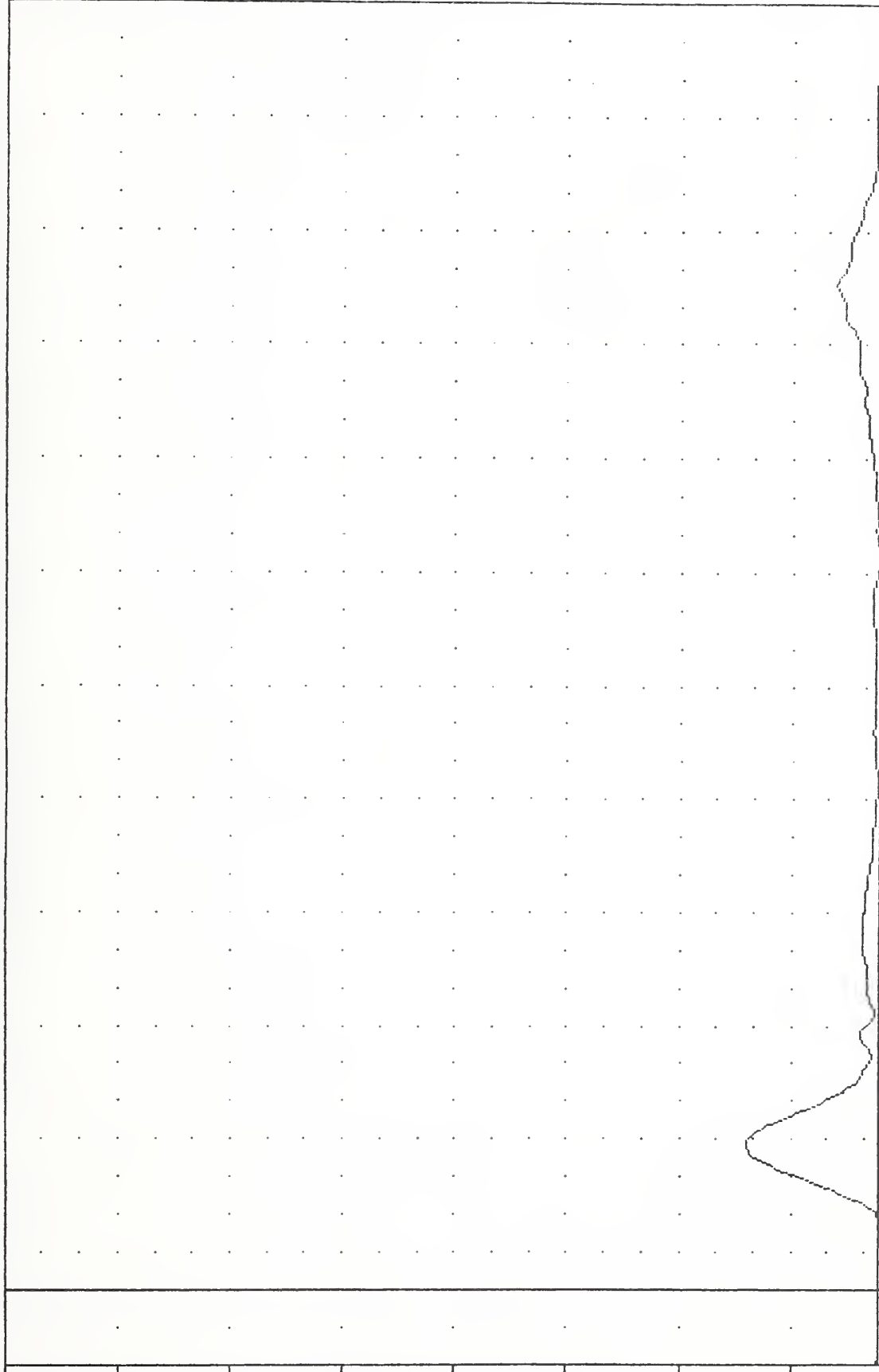
FILTER = HSR1 136/ 189/ -50  
 MIN. MAX VALUES = -4.65e 50.63 , 14.52 e 38.13



VRIC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 T12RG1

FILTER = HSR( 136/ 189/ -50  
 MIN. MAX VALUES = 0.04e -13.75, 80.03 e 38.13

ACCELERATION (G)

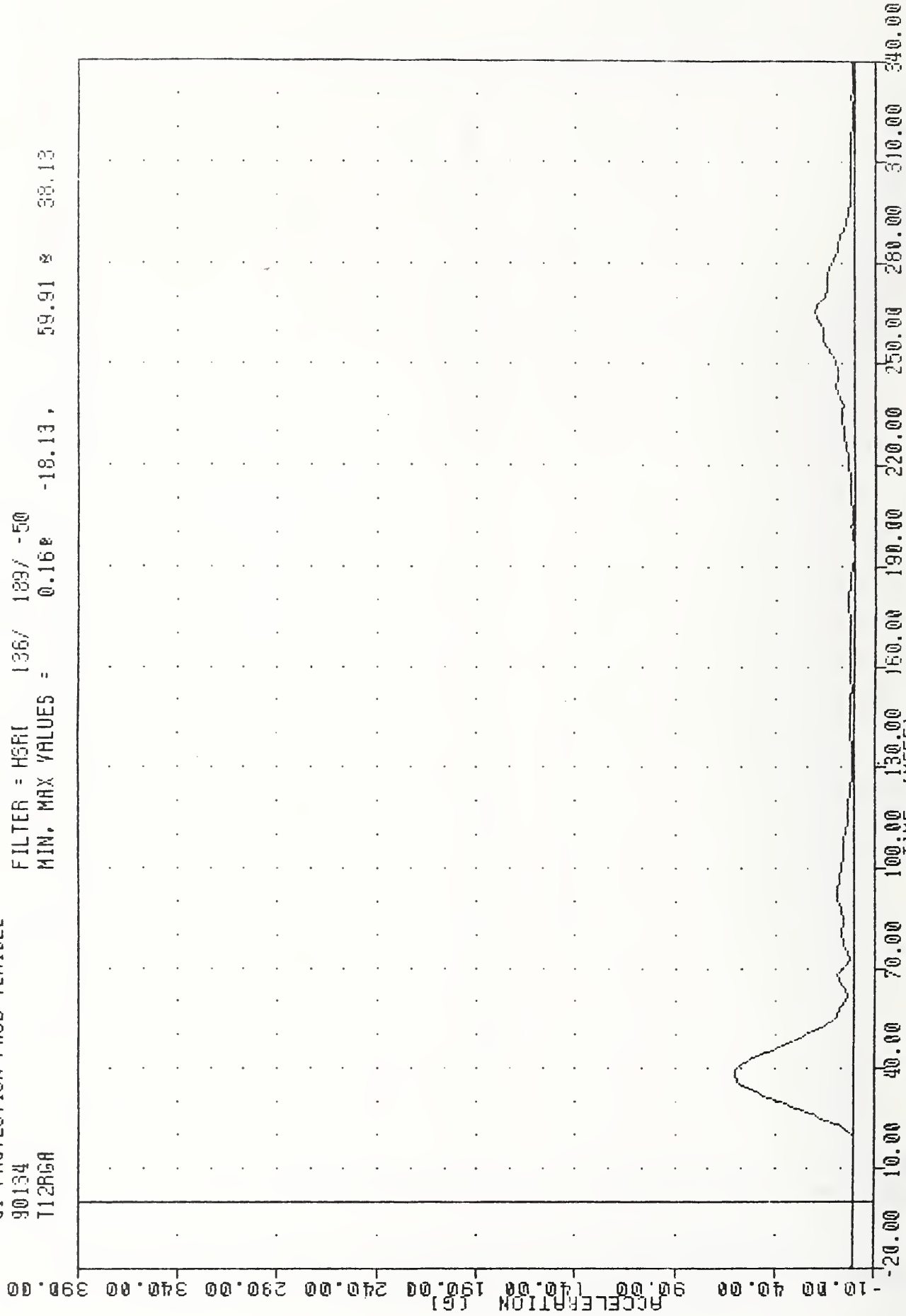


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 DRIVER LOWER SPINE RESULTANT ACCELERATION

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 T12RGA

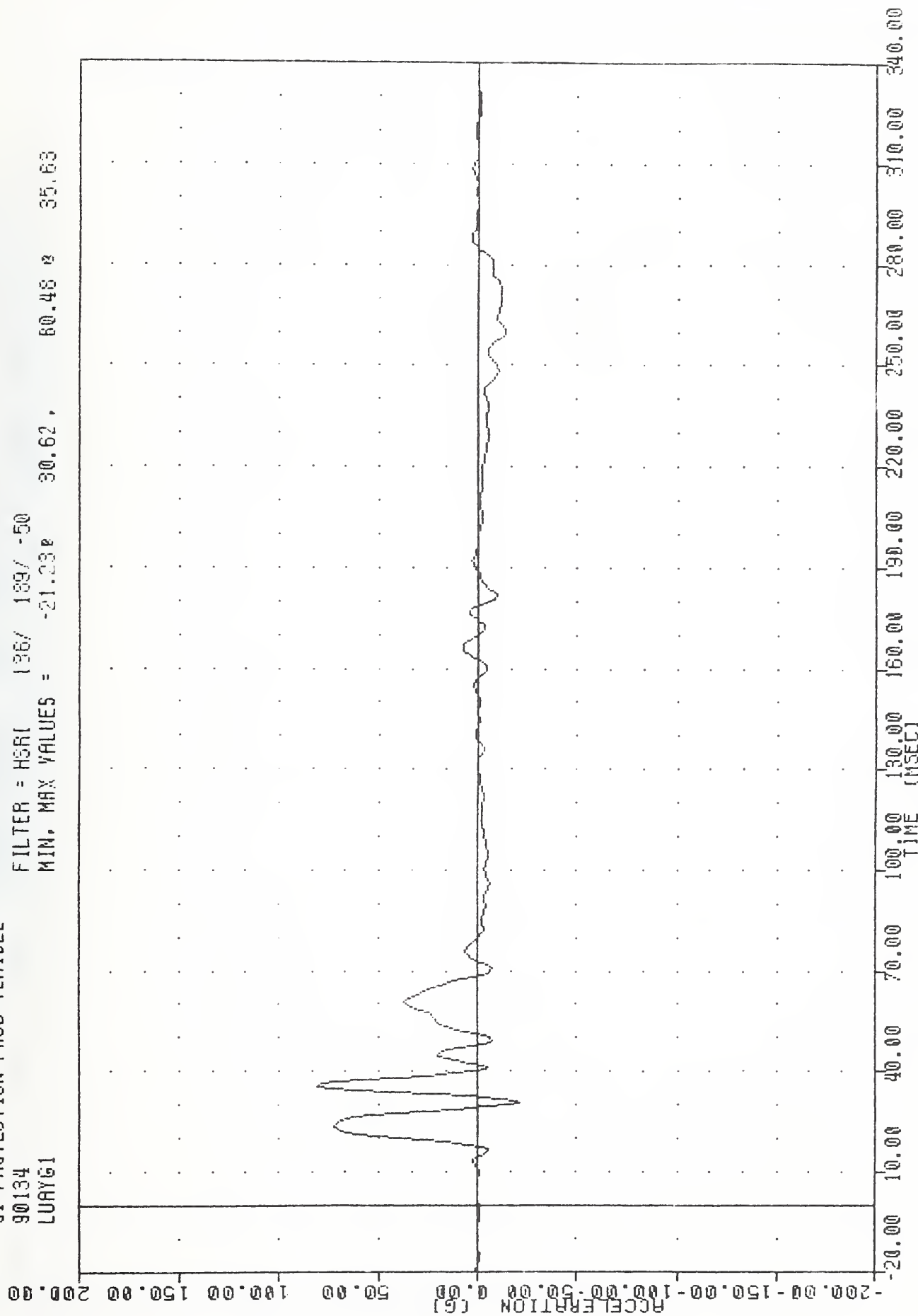
FILTER = HSR1 136/ 129/ -50  
 MIN. MAX VALUES = 0.16e -18.13, 59.91 e 38.13



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 DRIVER LOWER SPINE REDUNDANT RESULTANT ACCELERATION

YRTC . 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 LUAYG1

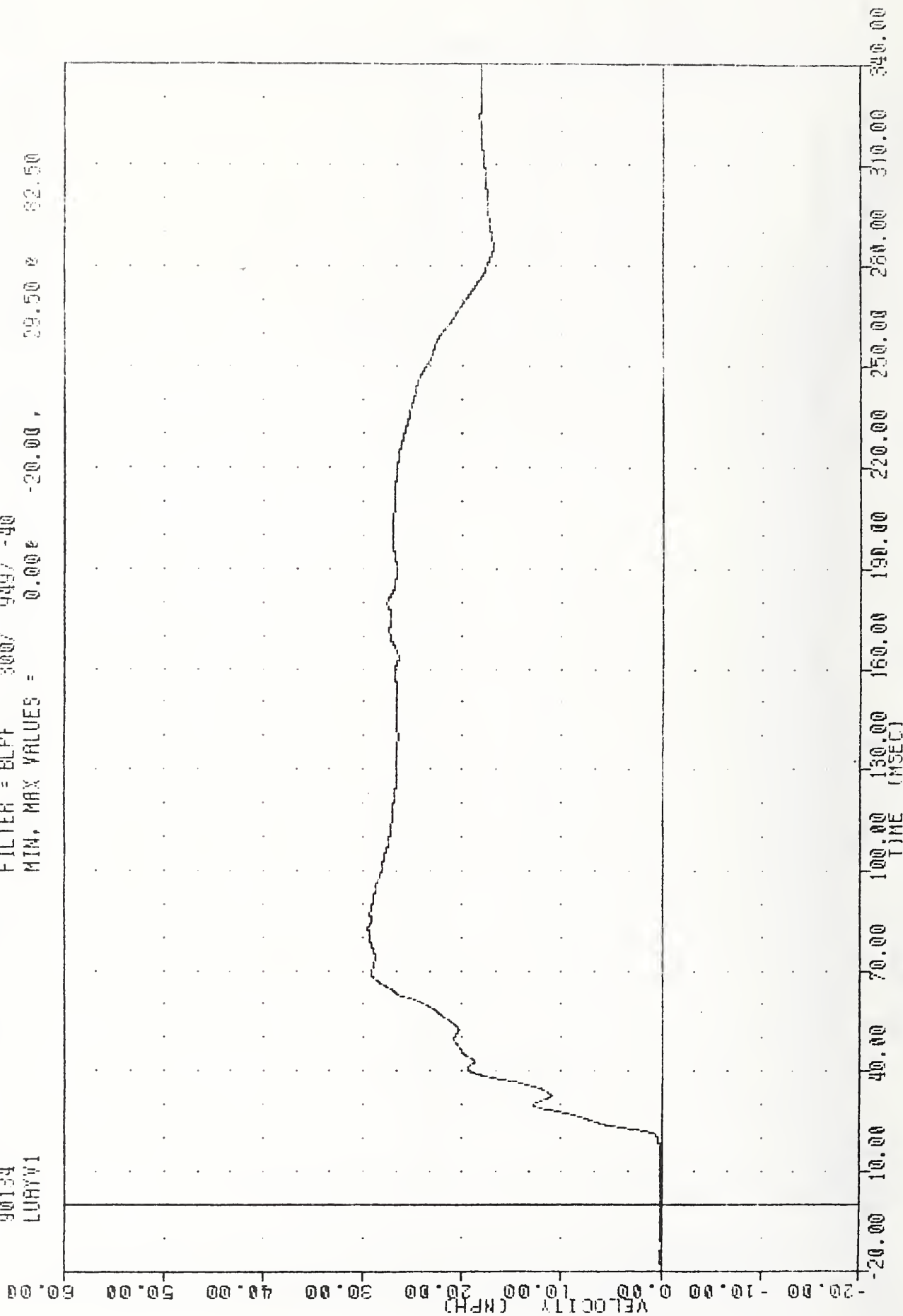
FILTER = HSR1 136/ 189/ -50  
 MIN. MAX VALUES = -21.23 30.62, 60.48 35.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 DRIVER LEFT HIPPER ARMORMEN RIR Y AXIS ACCELERATION

VRTC , 900514  
 SI PROTECTION PROO VEHICLE  
 90134  
 LURAY1

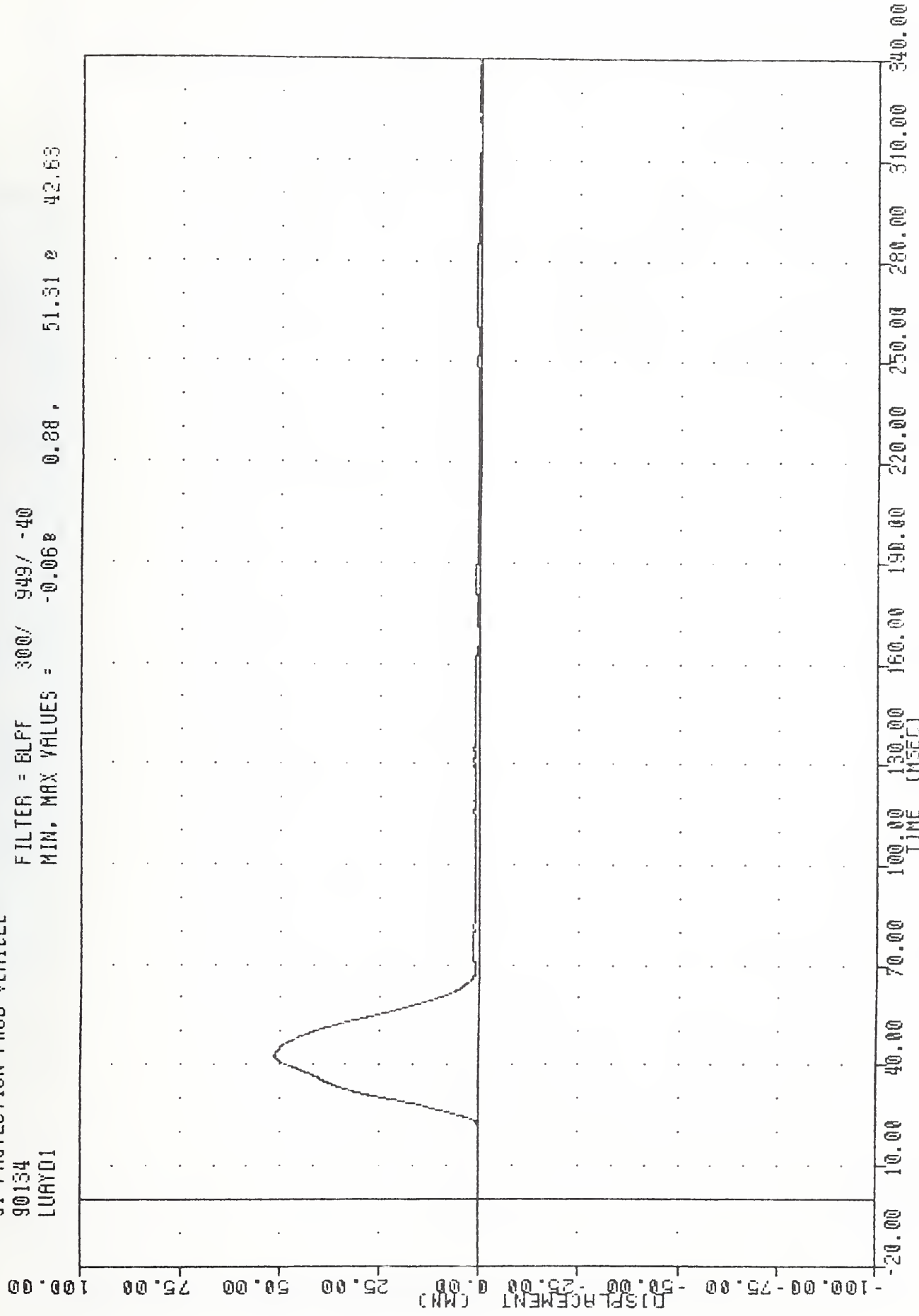
FILTER = BLPF 300/ 949/ -40  
 MIN, MAX VALUES = 0.00e -20.00 , 29.50 e 82.50



MOVING DEFORMABLE BARRIER INTO FORD TAURUS SENTRA  
 DRIVER LEFT UPPER ABDOMEN RIB Y AXIS VELOCITY

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LUAYD1

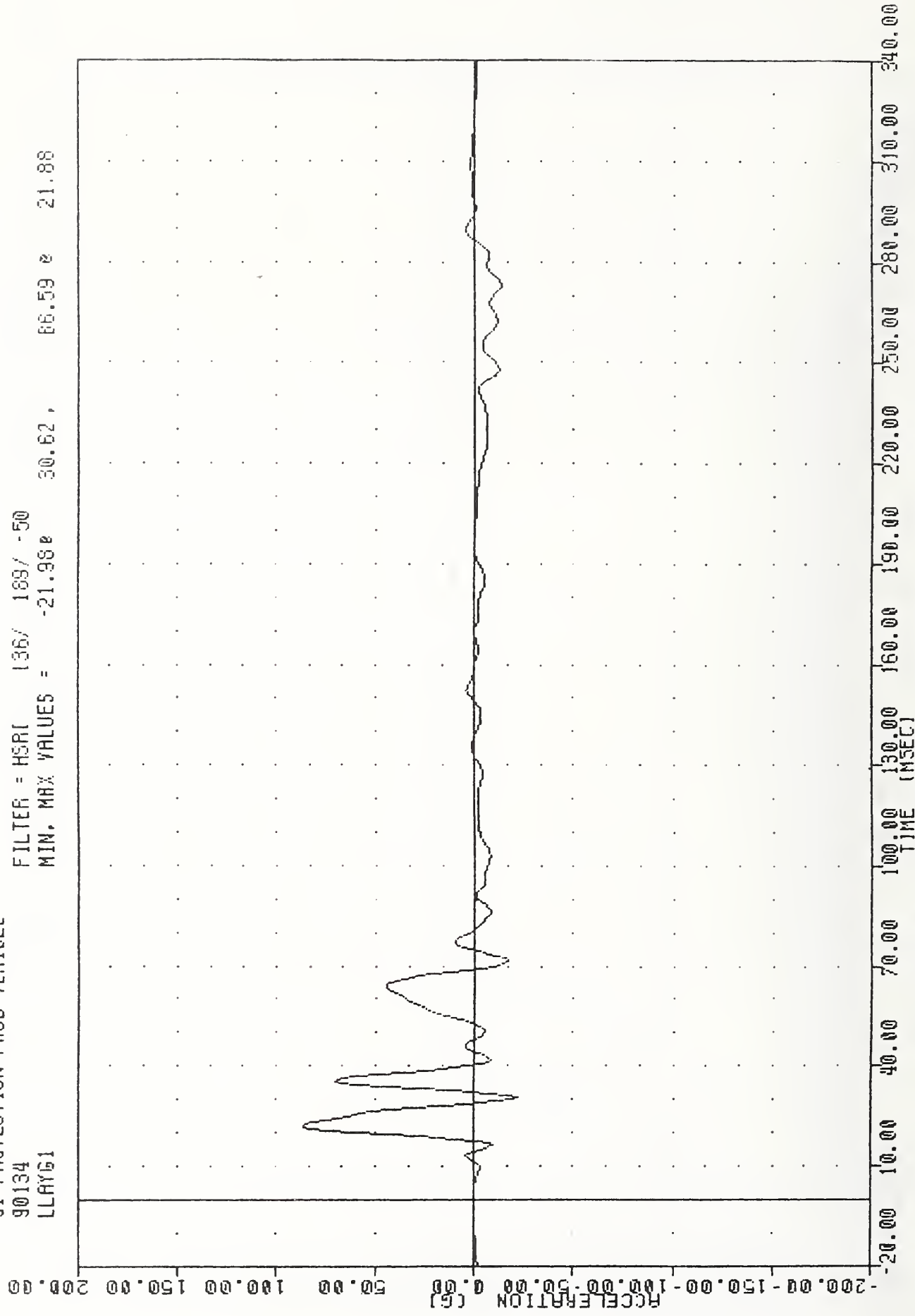
FILTER = BLFF 300/ 949/ -40  
MIN. MAX VALUES = -0.068 0.88 , 51.31 e 42.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER LEFT UPPER ABDOMEN RIB DISPLACEMENT

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LLAYG1

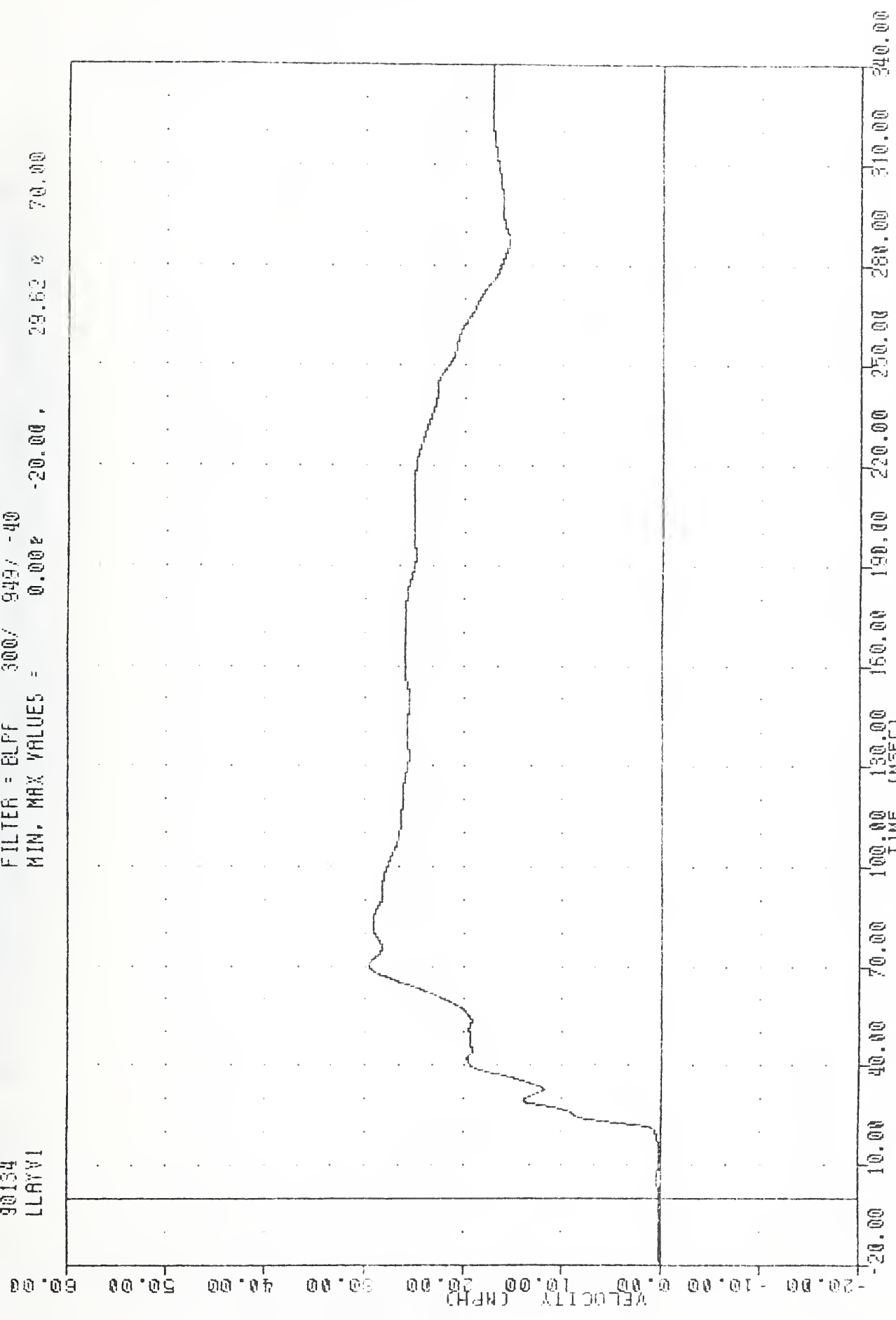
FILTER = HSRI 136/ 169/ -50  
MIN. MAX VALUES = -21.98 30.62 , 86.59 21.88



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER LEFT LOWER ARMOR PIR V AVTS ACCELERATION

VRIC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LLAYV1

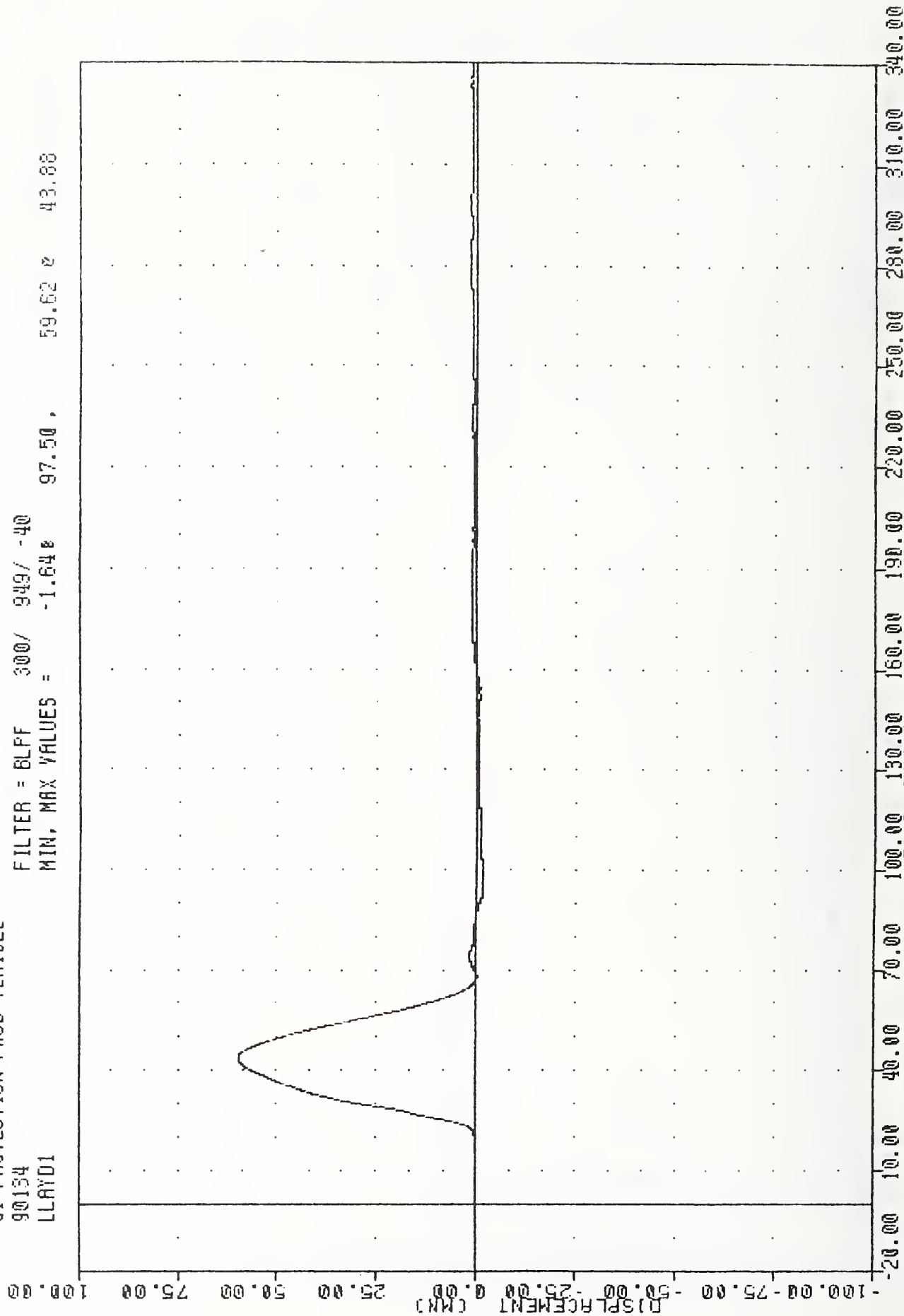
FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = 0.00e -20.00 , 29.62 e 70.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS SENTRA  
DRIVER LEFT LOWER ABDOMEN RIB Y AXIS VELOCITY

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 LLOYD1

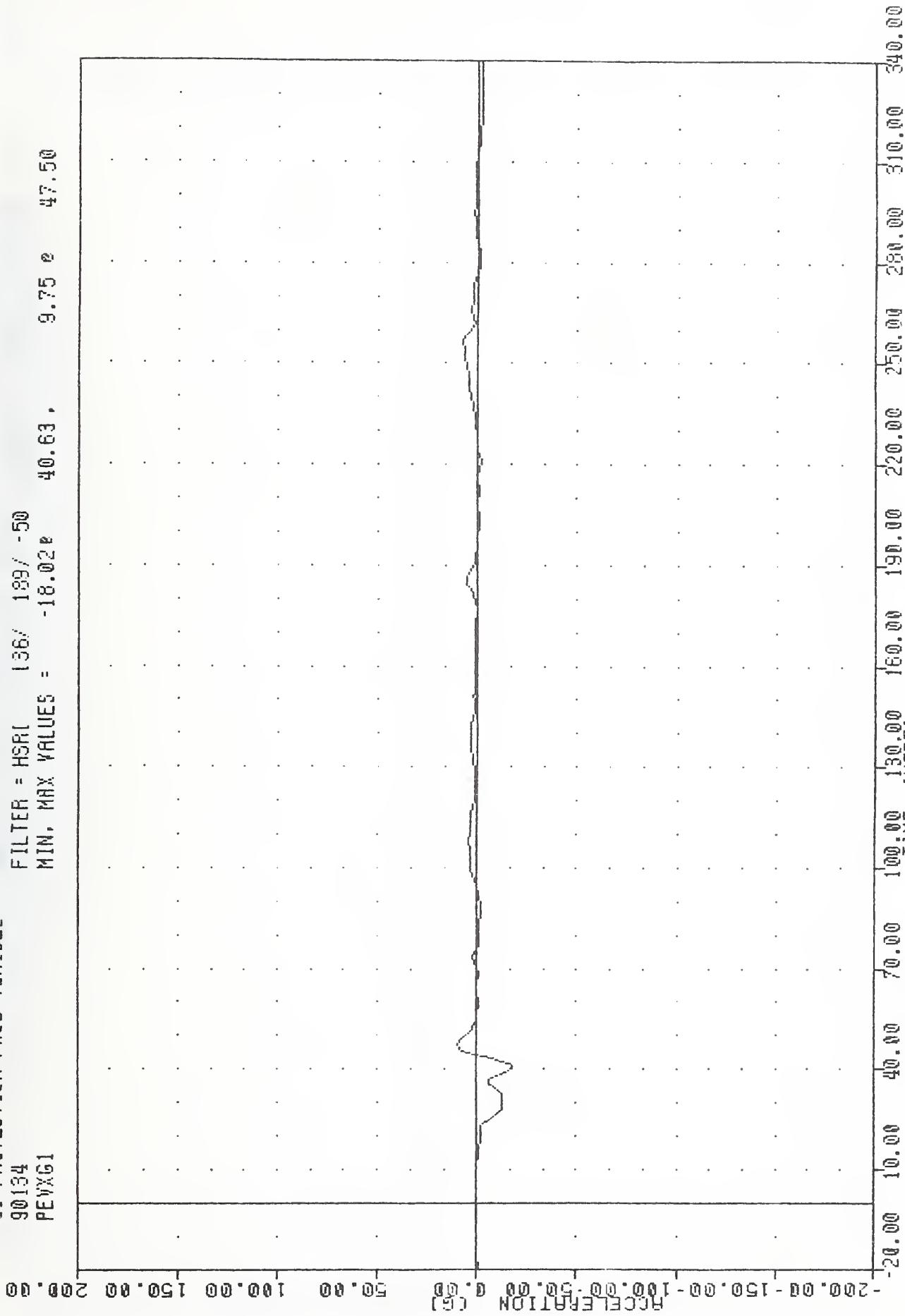
FILTER = BLPF 300/ 949/ -40  
 MIN, MAX VALUES = -1.64e 97.50, 59.62 e 43.88



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 DRIVER LEFT LOWER ARMOR PEN AIR DISPLACEMENT

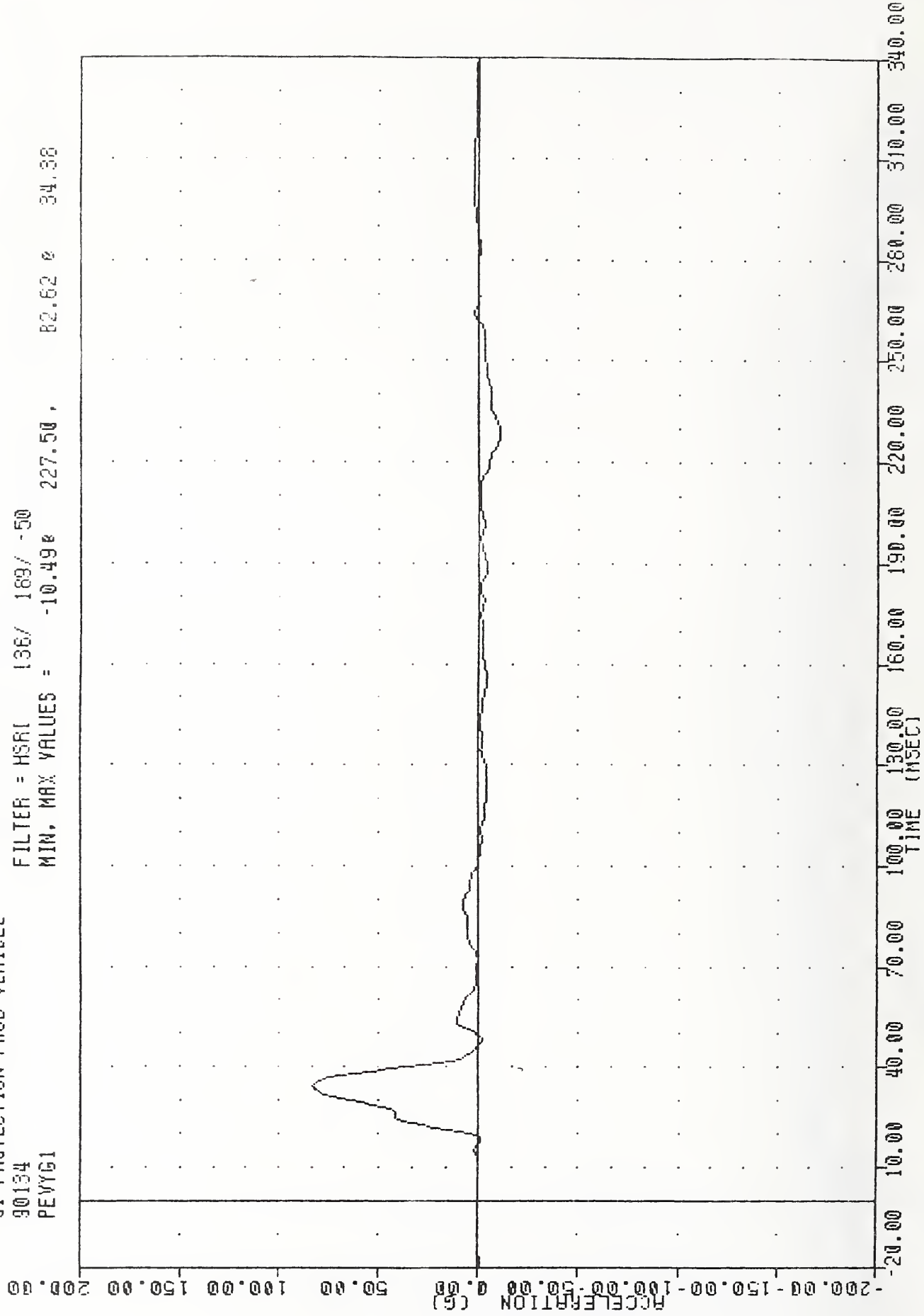
VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
PEVXG1

FILTER = HSRI 136/ 139/ -50  
MIN, MAX VALUES = -18.02 40.63, 9.75 47.50



VRTC , 900514  
 SI PROTECTION FORD VEHICLE  
 90134  
 PEVYG1

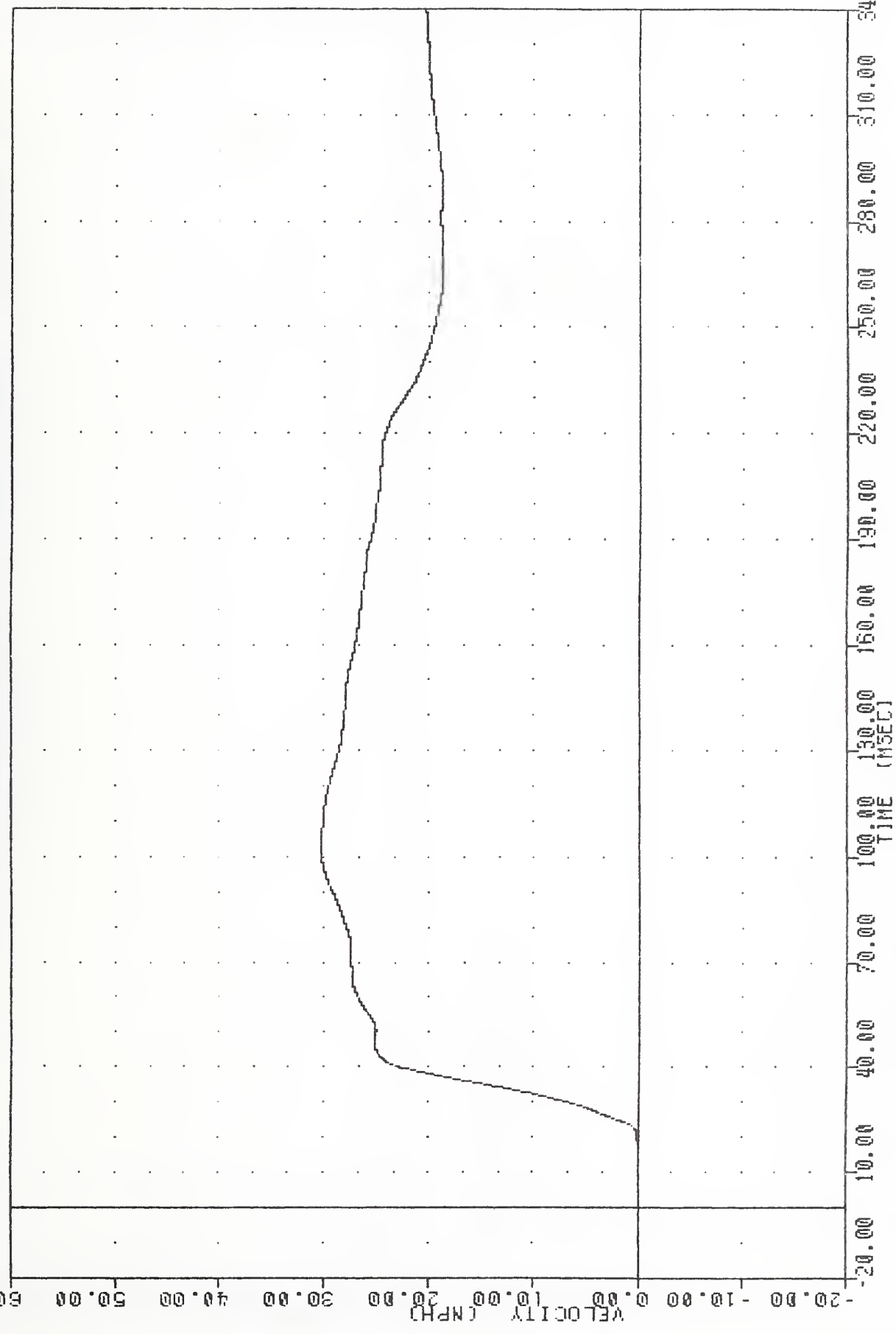
FILTER = HSRI 136/ 183/ -50  
 MIN, MAX VALUES = -10.498 227.50 , 82.62 0 34.38



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 DRIVER PELVYS Y AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
PEVVV1

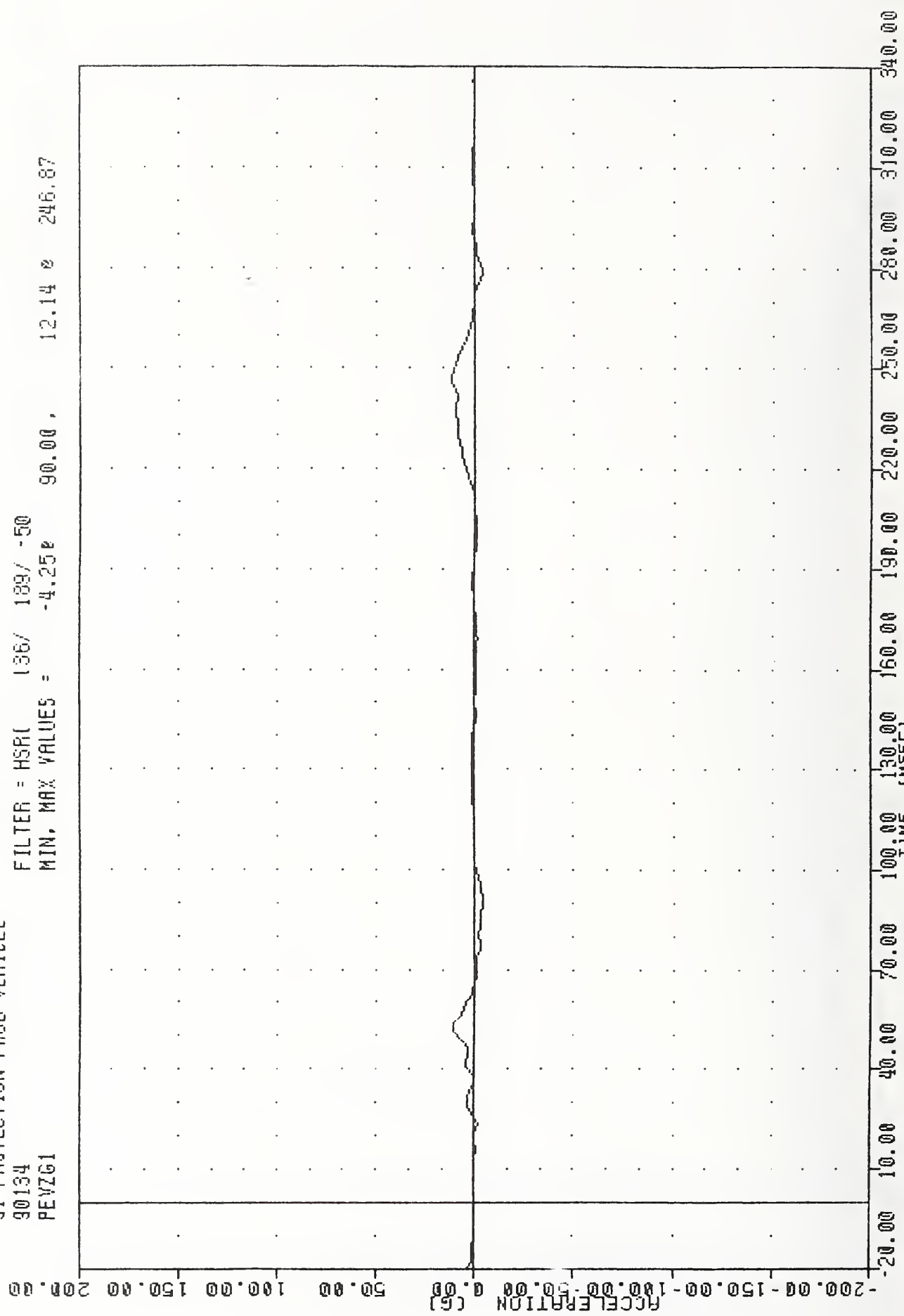
FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -0.11e 4.25 . 50.24 e 100.75



MOVING DEFORMABLE BARRIER INTO FORD TAURUS SENTRA  
DRIVER PELVIS Y AXIS VELOCITY

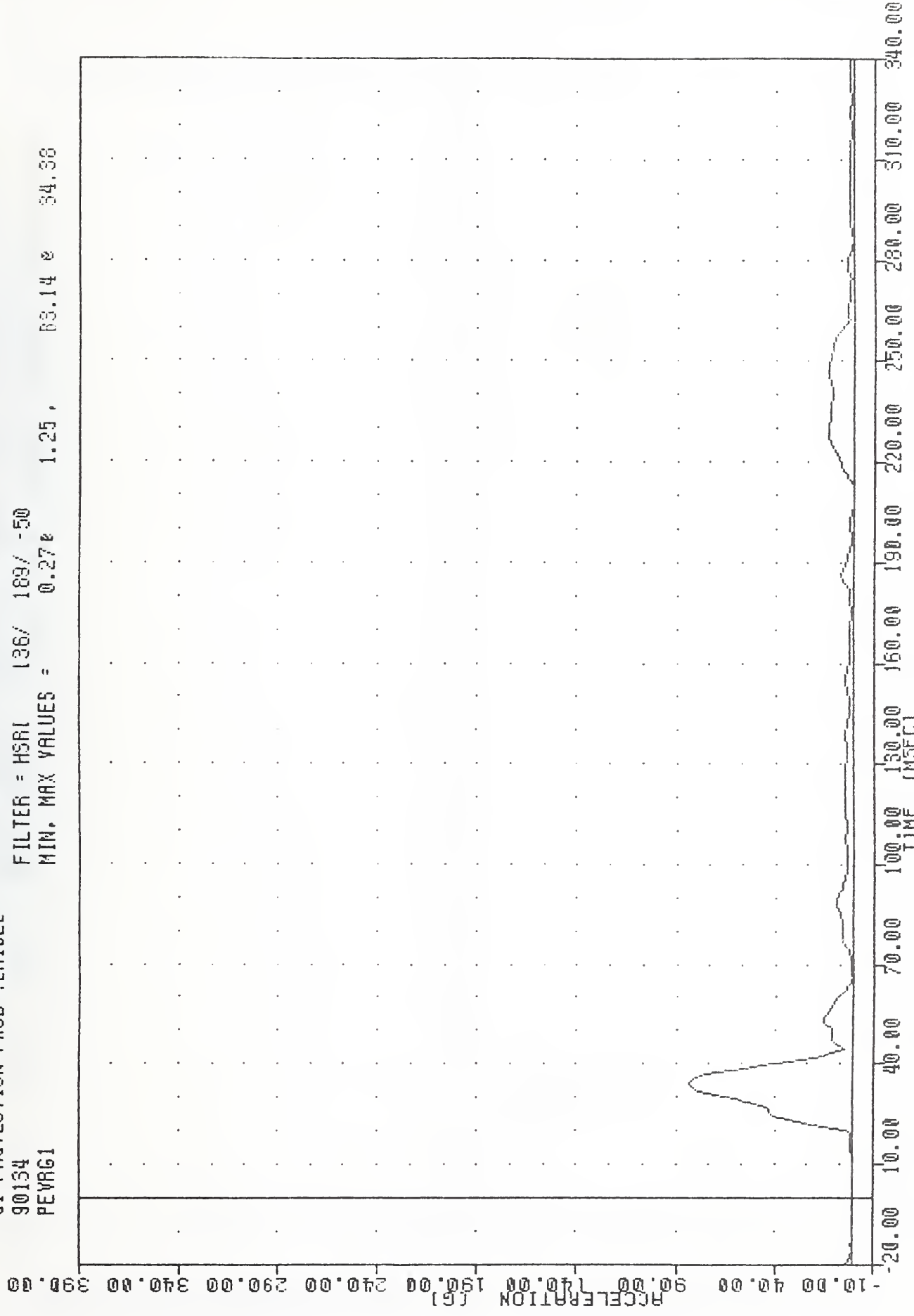
VRTC , 900514  
 SI PROTECTION PR00 VEHICLE  
 90134  
 PEVZG1

FILTER = HSR1 136/ 139/ -50  
 MIN. MAX VALUES = -4.25e 90.00 , 12.14 e 246.87



VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
PEVRG1

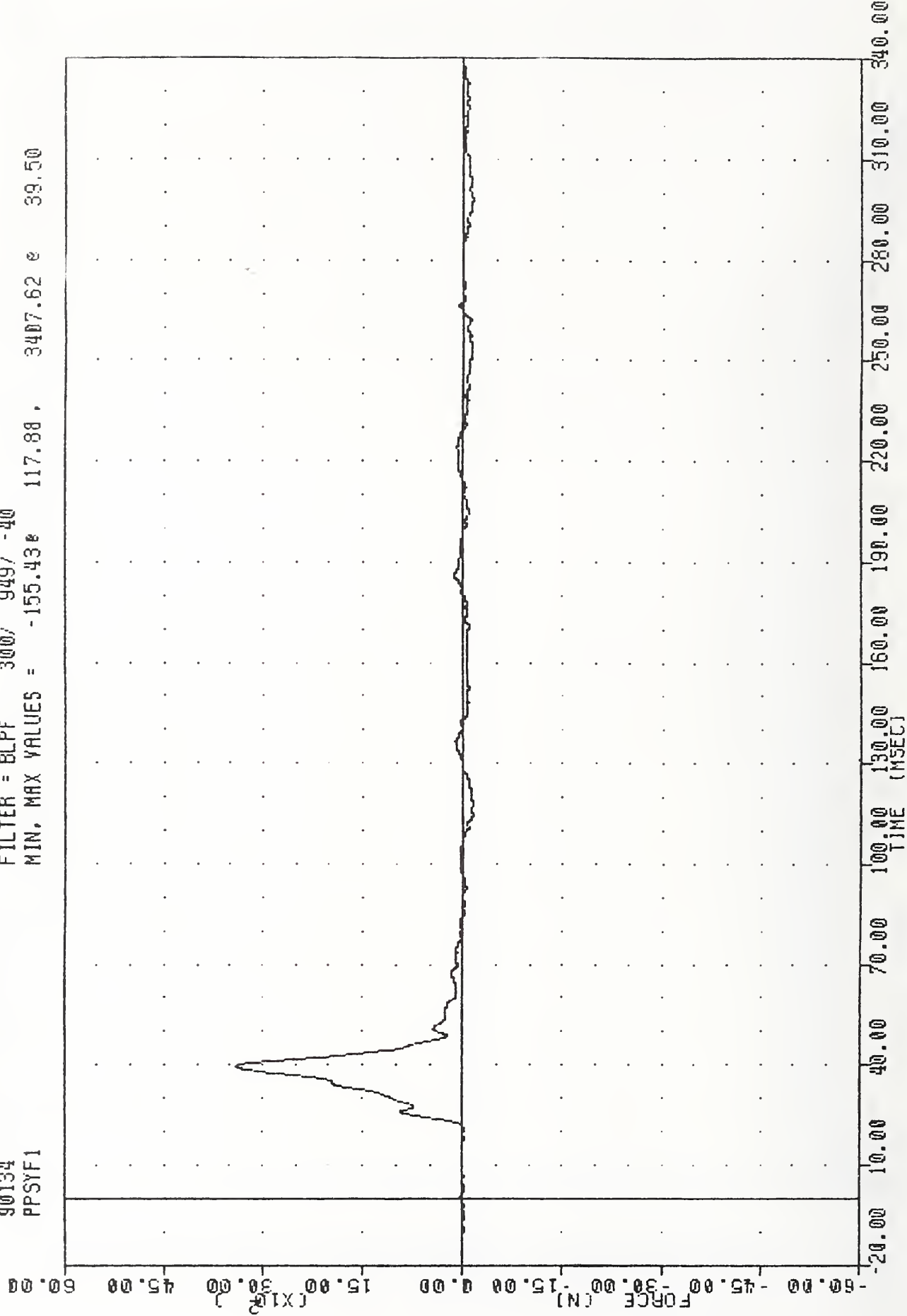
FILTER = HSRI 136/ 189/ -50  
MIN. MAX VALUES = 0.27g 1.25, 83.14 g 84.38



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER PELVIS RESULTANT ACCELERATION

VRTC 900514  
SI PROTECTION PROD VEHICLE  
90134  
PPSYF1

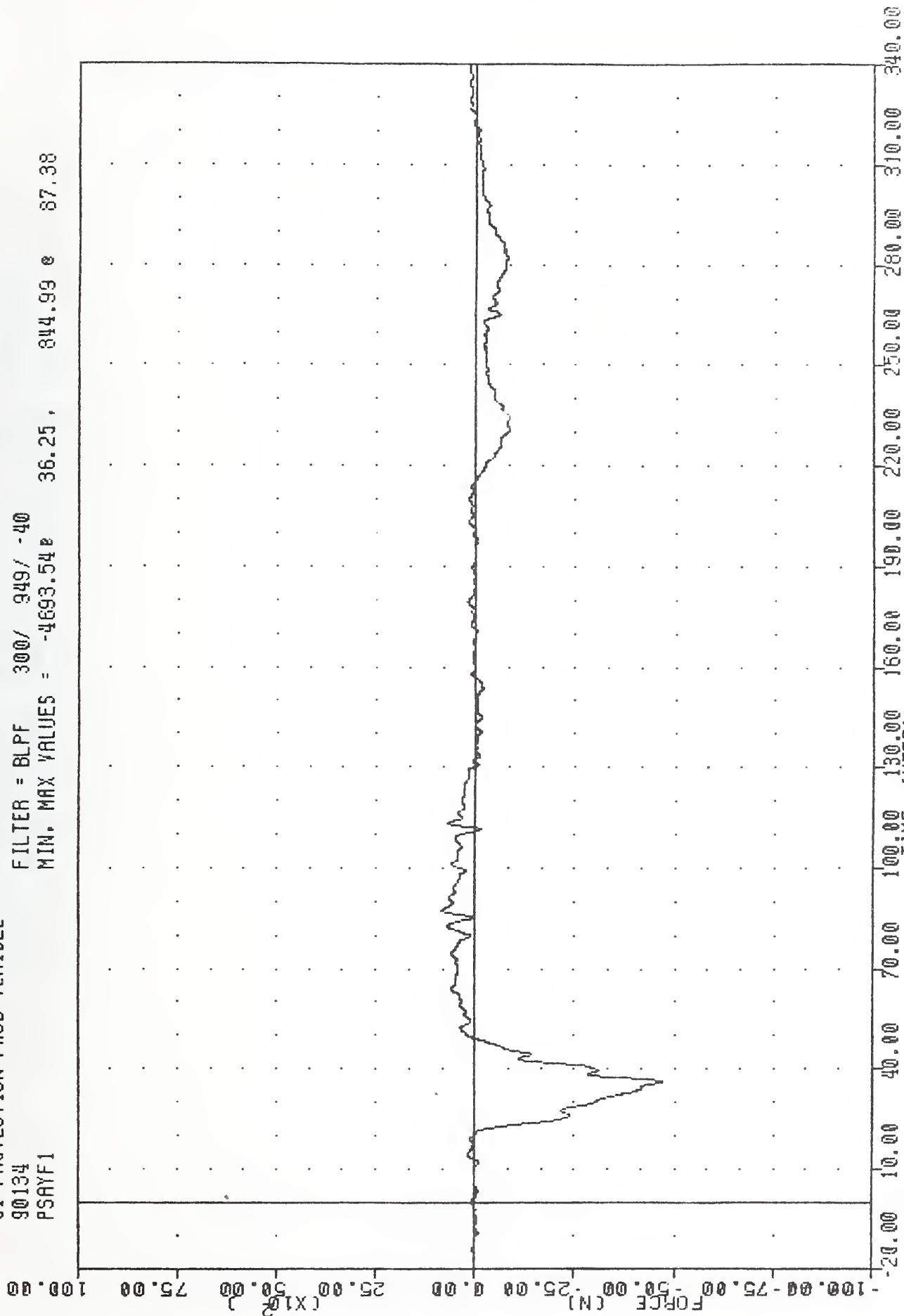
FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -155.43 117.88 3407.62 e 39.50



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER PUBIC SYMPHYSIS Y AXIS FORCE

VRTC .900514  
SI PROTECTION PROD VEHICLE  
90134  
PSAYF1

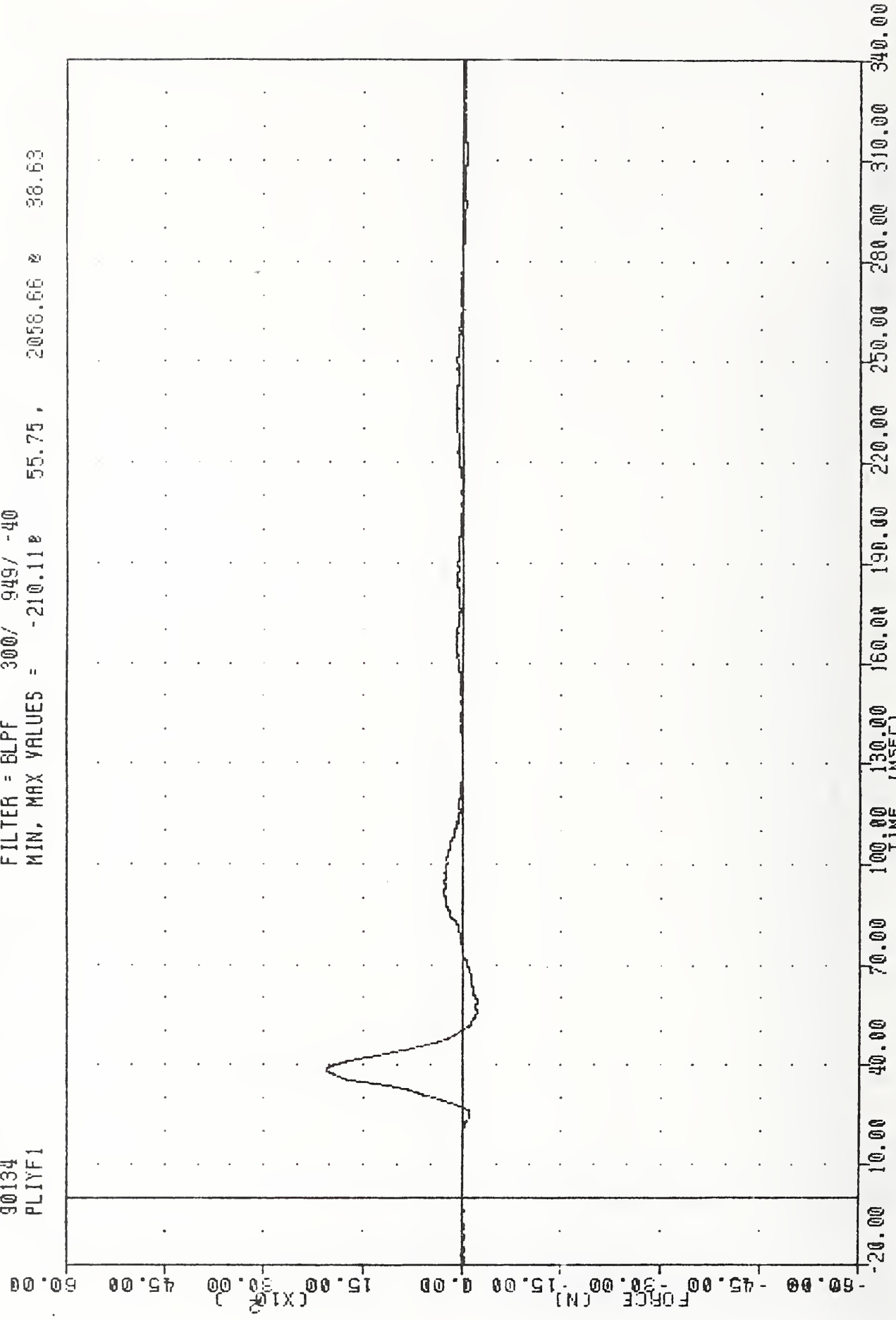
FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -4693.548 36.25, 844.99 8 87.38



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER PELVIS SACRUM Y AXIS FORCE

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
PLIYF1

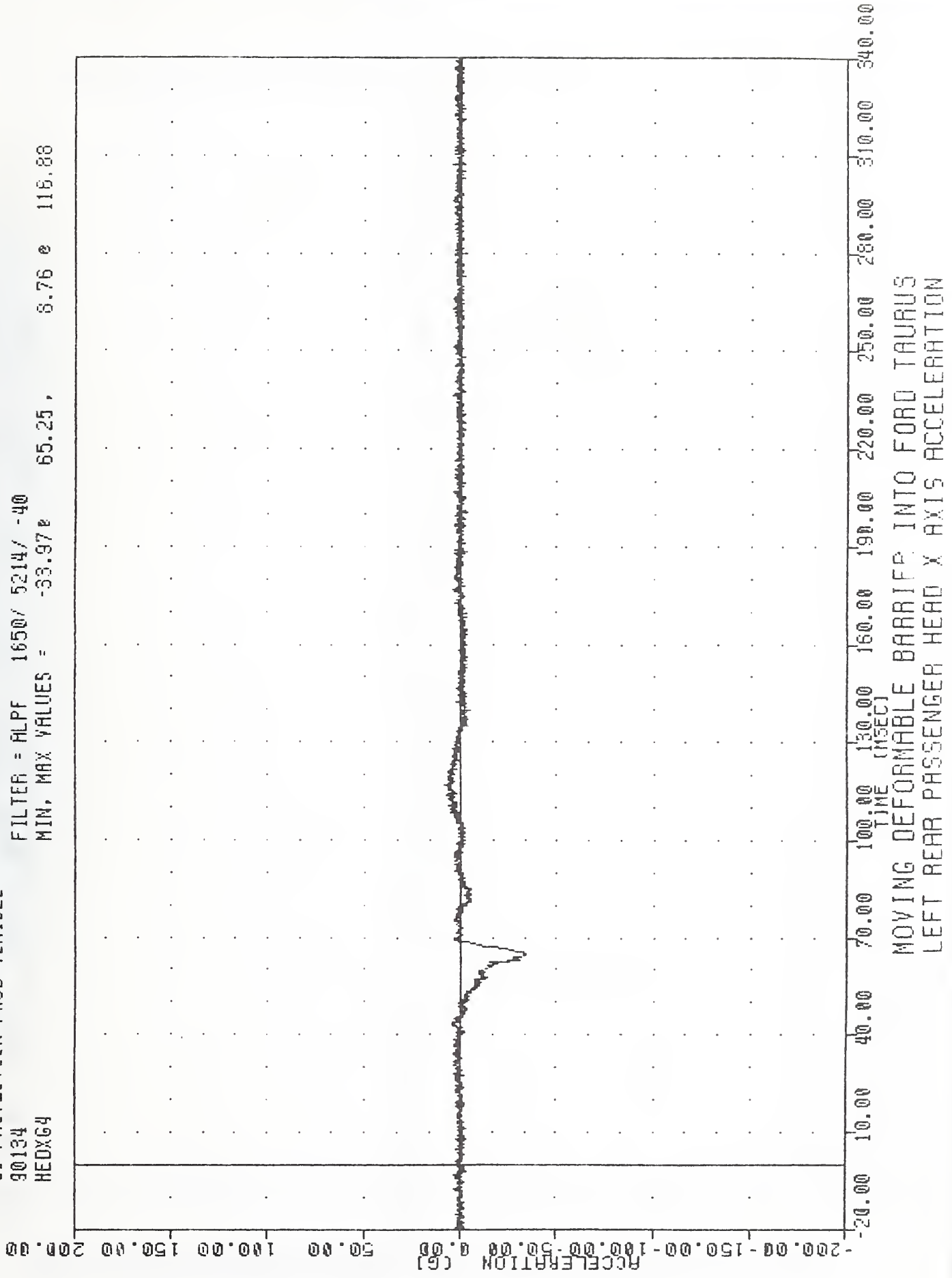
FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -210.118 55.75 , 2058.66 2 38.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
DRIVER PELVIS ILIAC Y AXIS FORCE

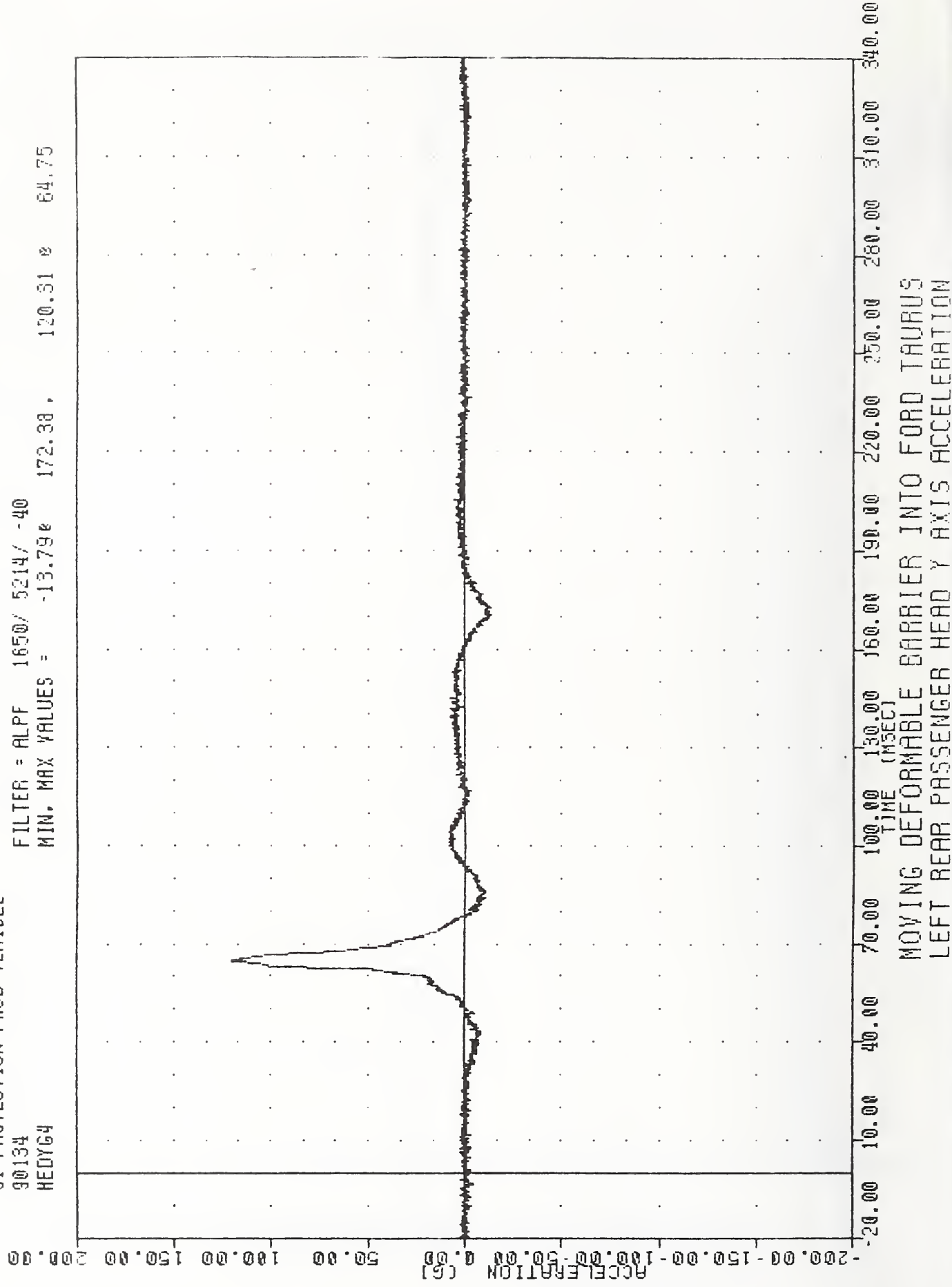
VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
HEDXG4

FILTER = ALPF 1650/ 5214/ -40  
MIN, MAX VALUES = -33.97 65.25, 8.76 116.88



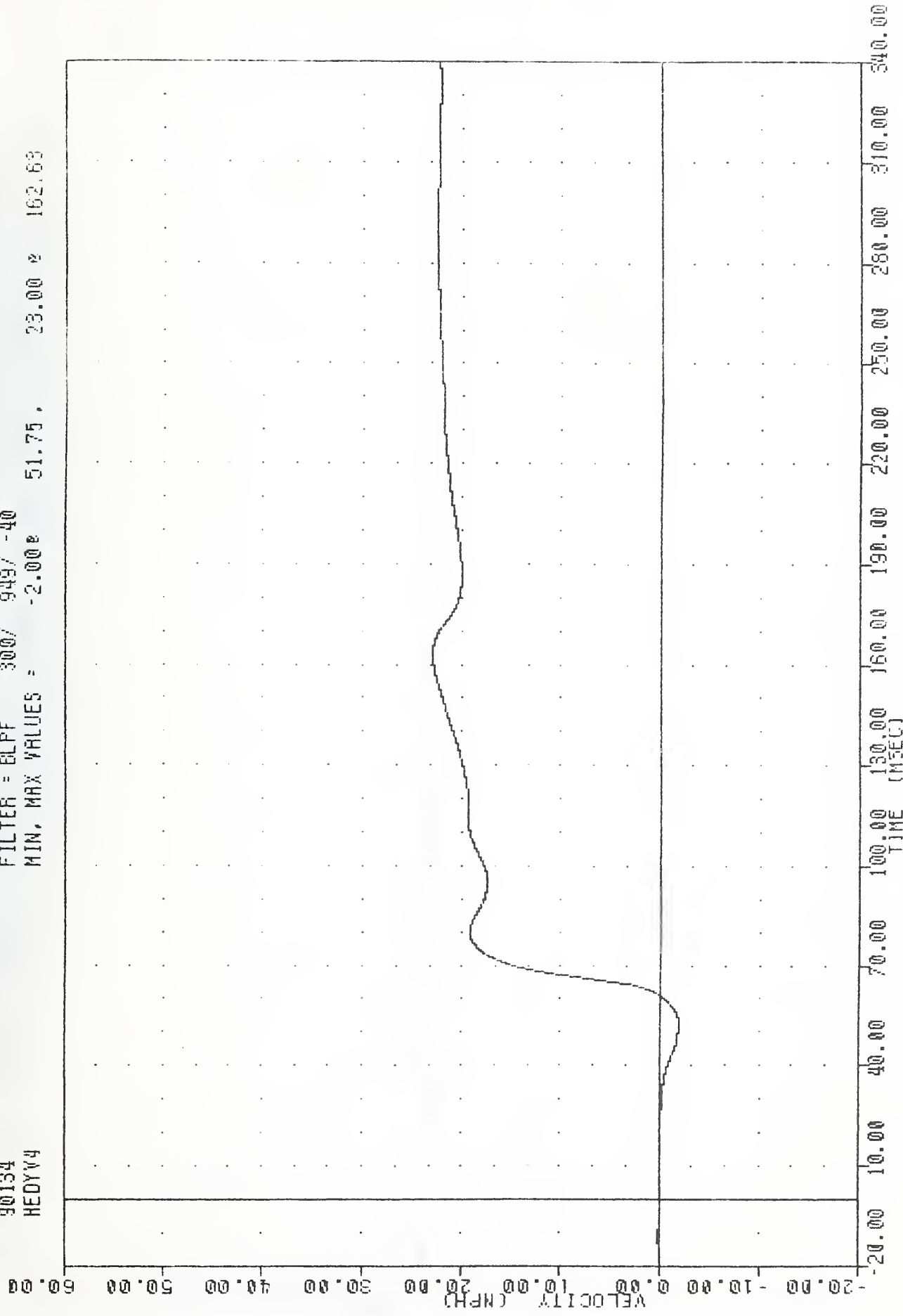
VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
HEDYG4

FILTER = ALPF 1650/ 5214/ -40  
MIN. MAX VALUES = -13.79e 172.38 , 120.51 e 64.75



VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
HEDYV4

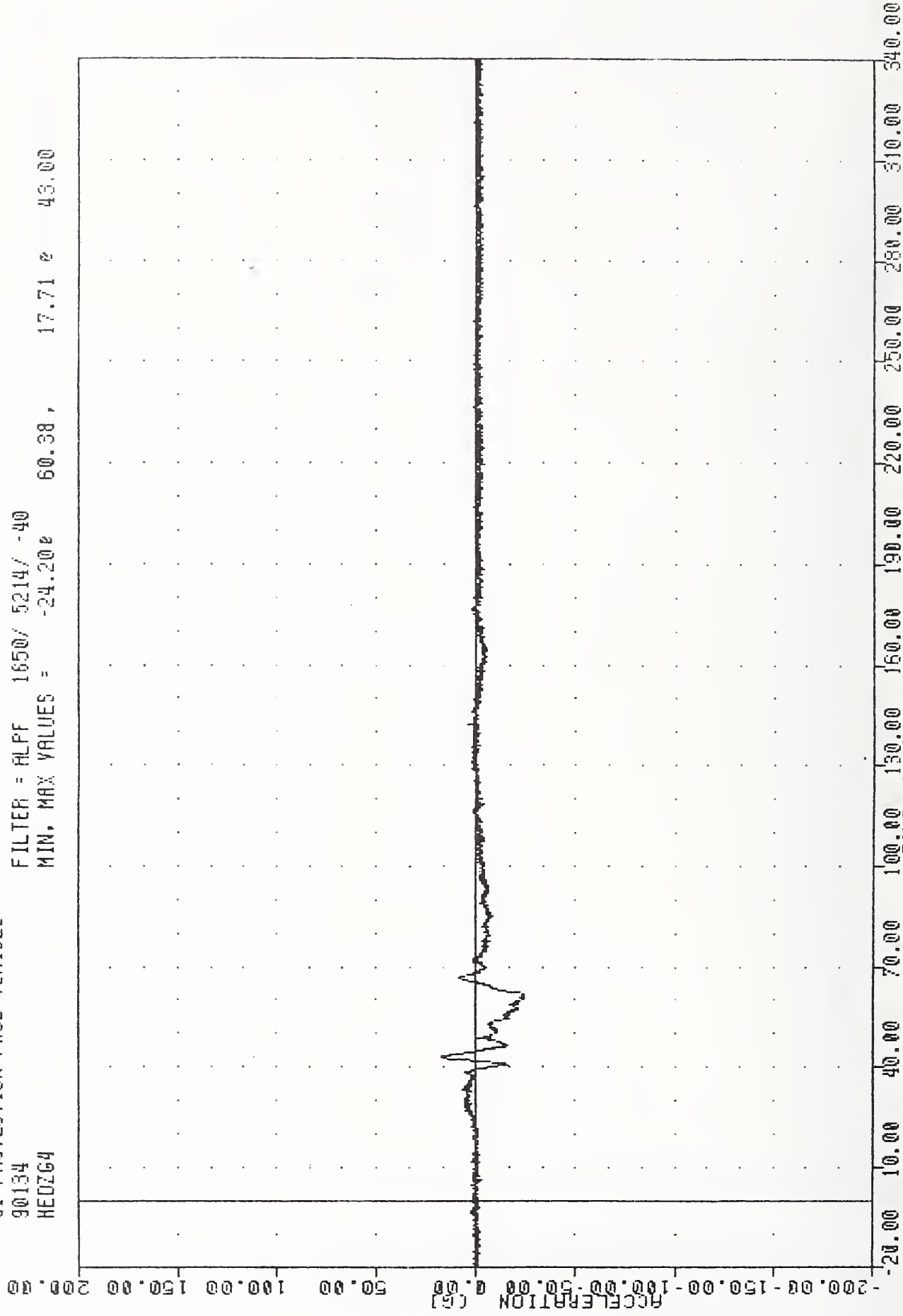
FILTER = 8LFF 300/ 949/ -40  
MIN. MAX VALUES = -2.000 51.75, 23.00 2 162.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER HEAD Y AXIS VELOCITY

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
HE0ZG4

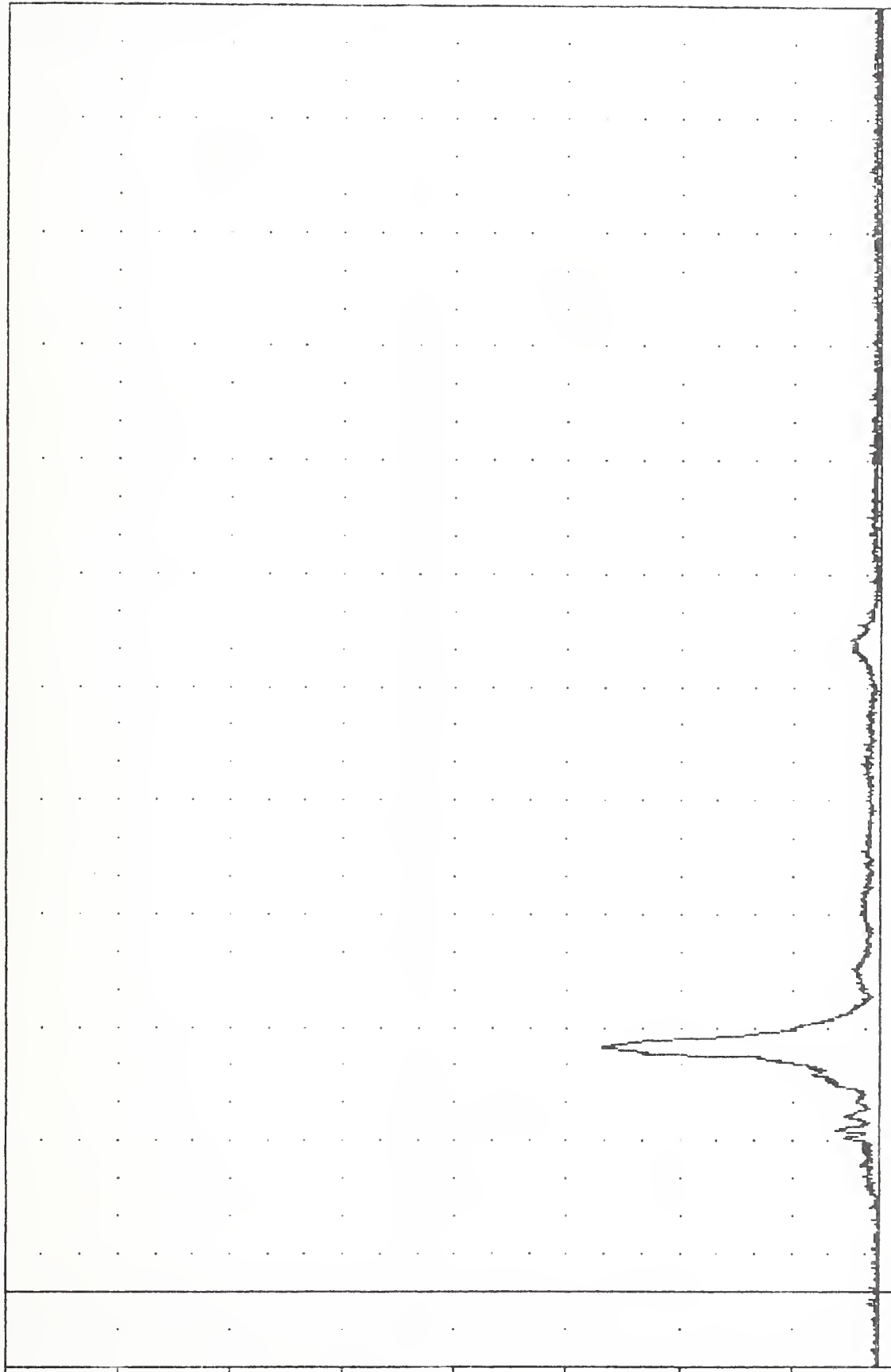
FILTER = ALPF 1650/ 5214/ -40  
MIN. MAX VALUES = -24.20e 60.38 , 17.71 e 43.00



VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
HEAD64

FILTER = ALPF 1650/ 5214/ -40  
MIN. MAX VALUES = 0.098 20.63 , 124.97 64.75

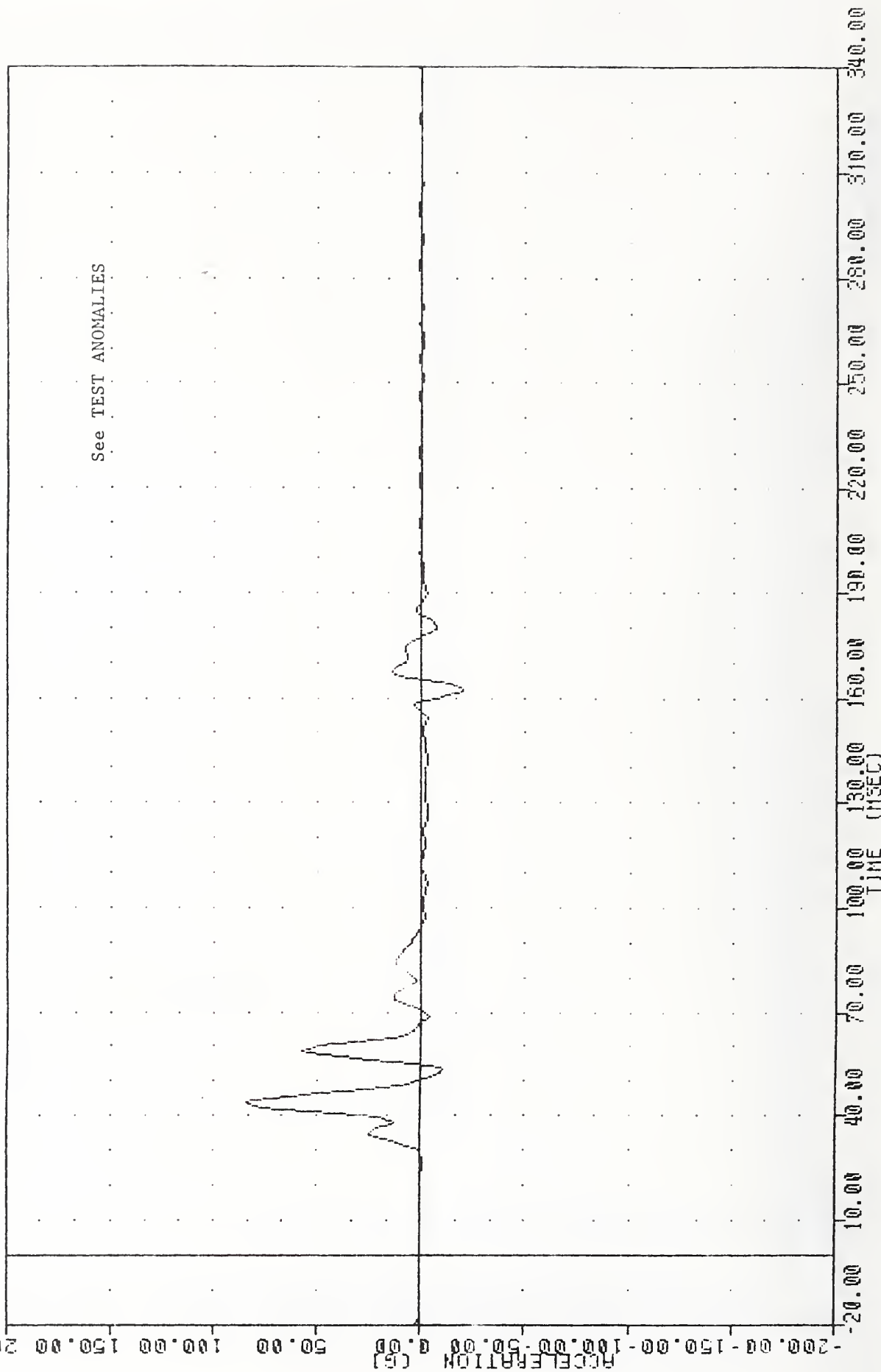
ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER HEAD RESULTANT ACCELERATION

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 SHLY64

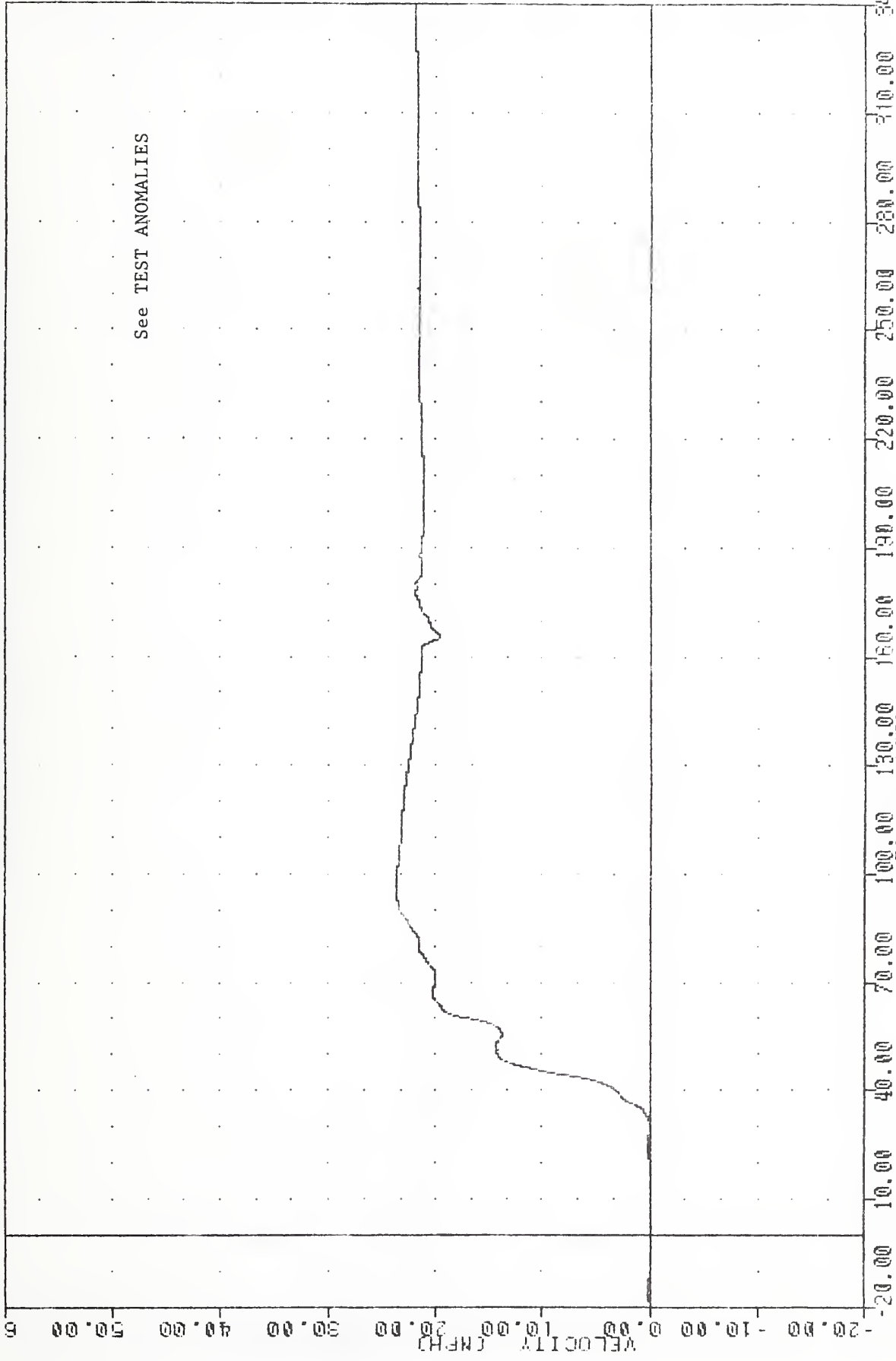
FILTER = HSR1 136/ 189/ -50  
 MIN. MAX VALUES = -20.300 162.50 , 83.83 43.75



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER LEFT SHOULDER Y AXIS ACCELERATION

VRIC , 980514  
31 PROTECTION PROD VEHICLE  
90134  
SHLYV4

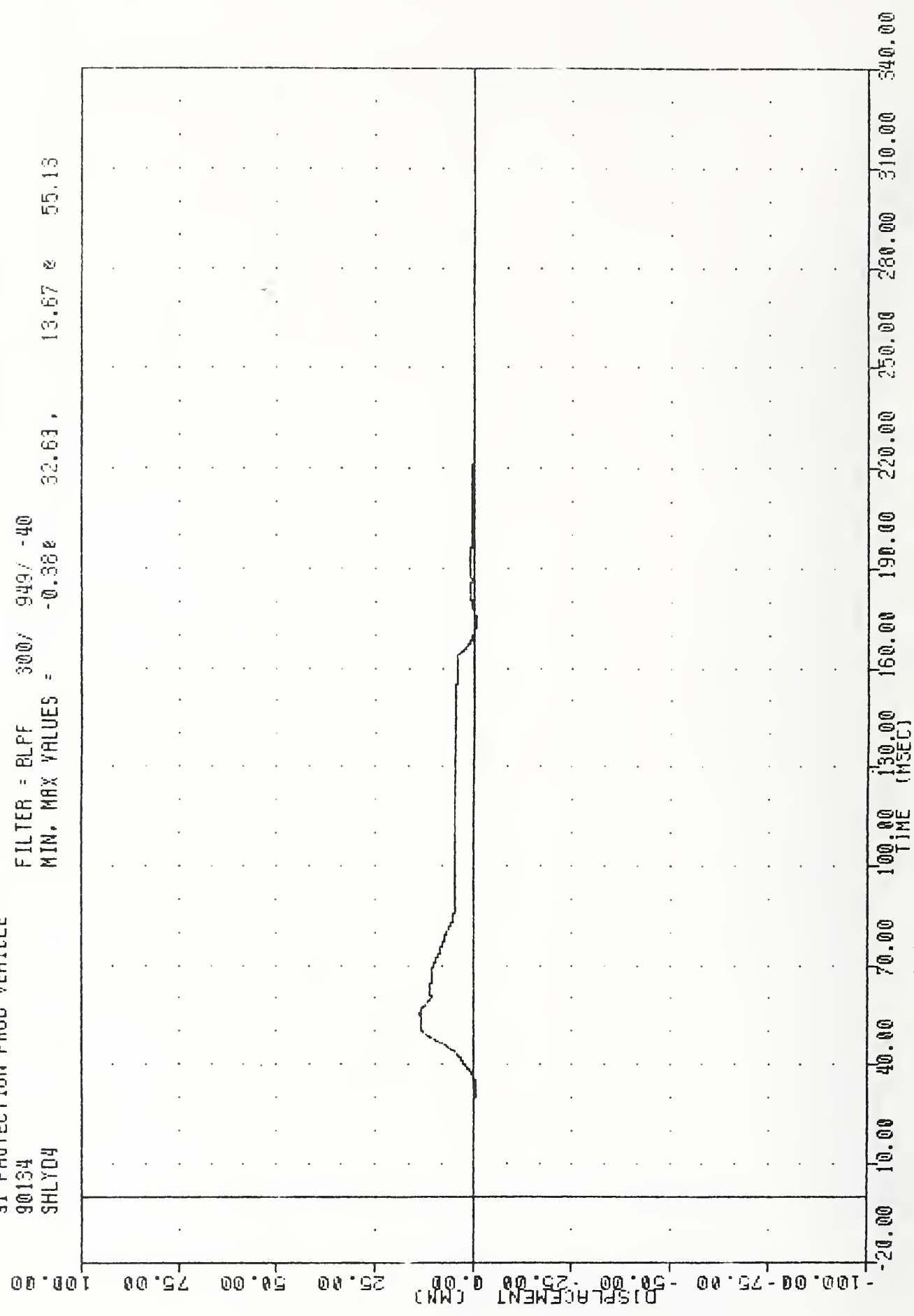
FILTER = BLPF 300/ 949/ -40  
MIN, MAX VALUES = -0.098 29.75, 23.73 95.75



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LEFT SHOULDER Y AXIS VELOCITY

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 SHLYD4

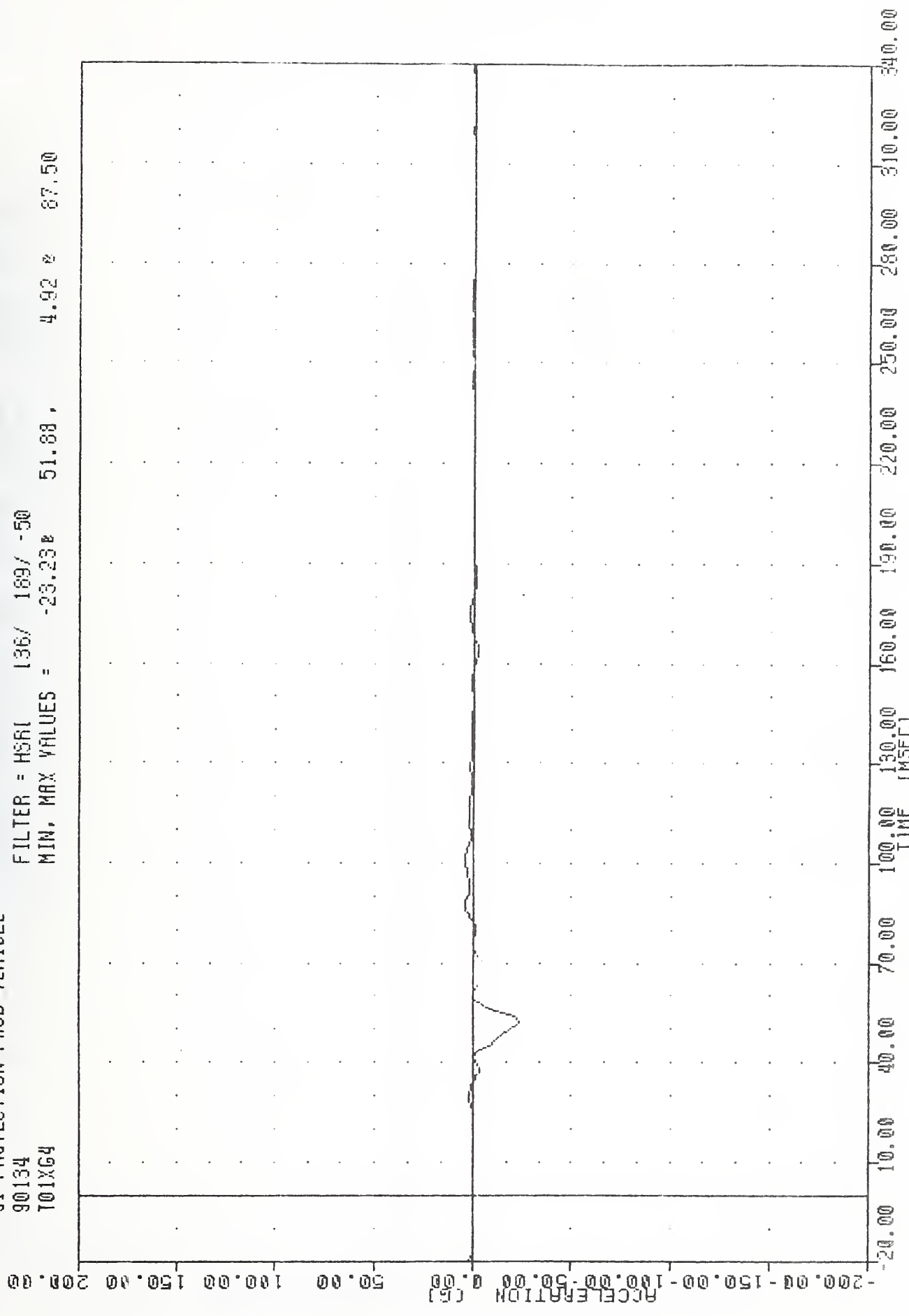
FILTER = BLPF 300/ 949/ -40  
 MIN. MAX VALUES = -0.38e 32.63, 13.67 e 55.13



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER LEFT SHOULDER TO SPINE DISPLACEMENT

VRTC , 300514  
 SI PROTECTION PROD VEHICLE  
 90134  
 T01XG4

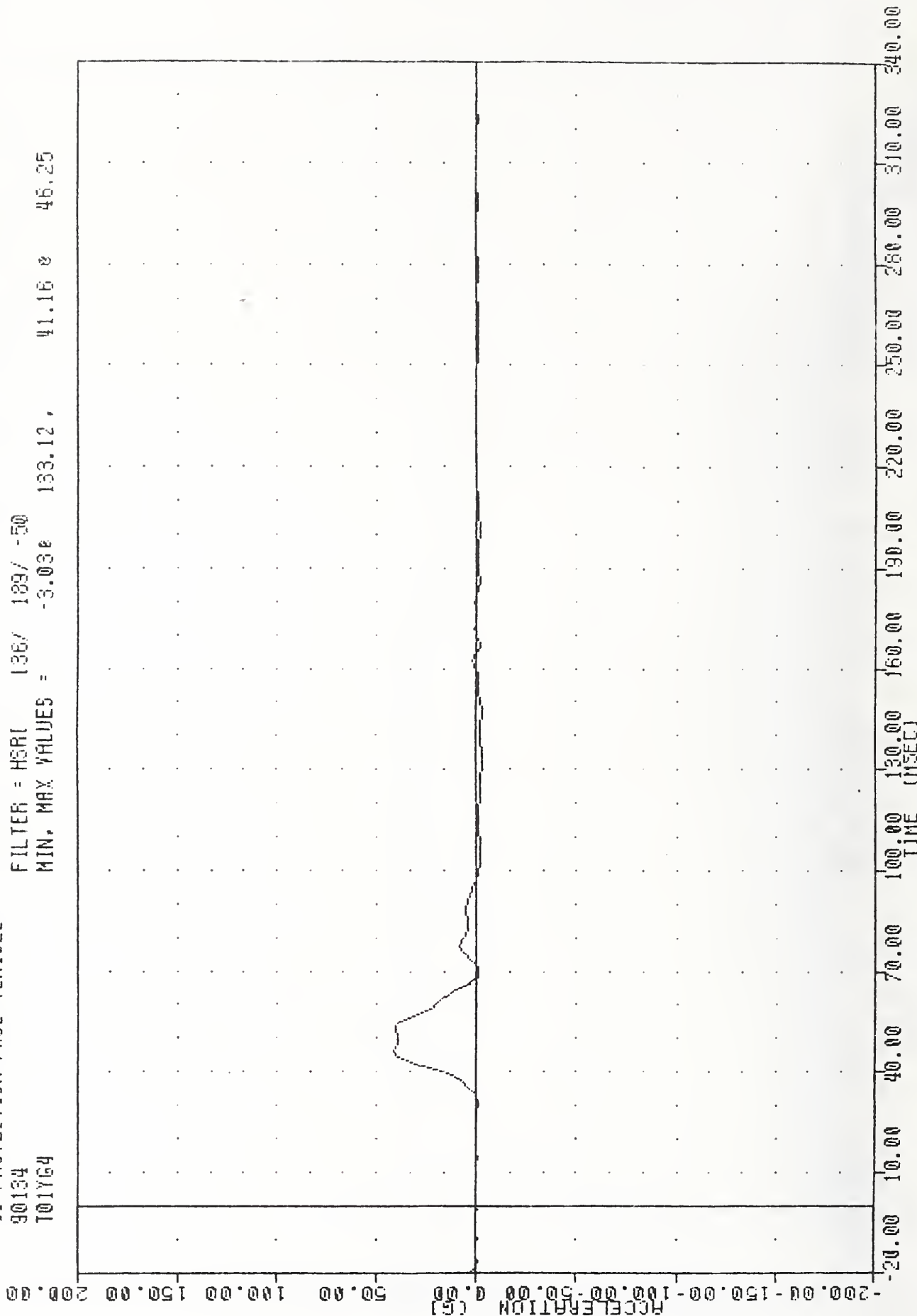
FILTER = HSRI 136/ 189/ -50  
 MIN. MAX VALUES = -23.23 51.88 , 4.92 87.50



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER UPPER SPINE X AXIS ACCELERATION

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 T01Y64

FILTER = HSR1 136/ 189/ -50  
 MIN, MAX VALUES = -3.03e 133.12, 41.16 e 46.25

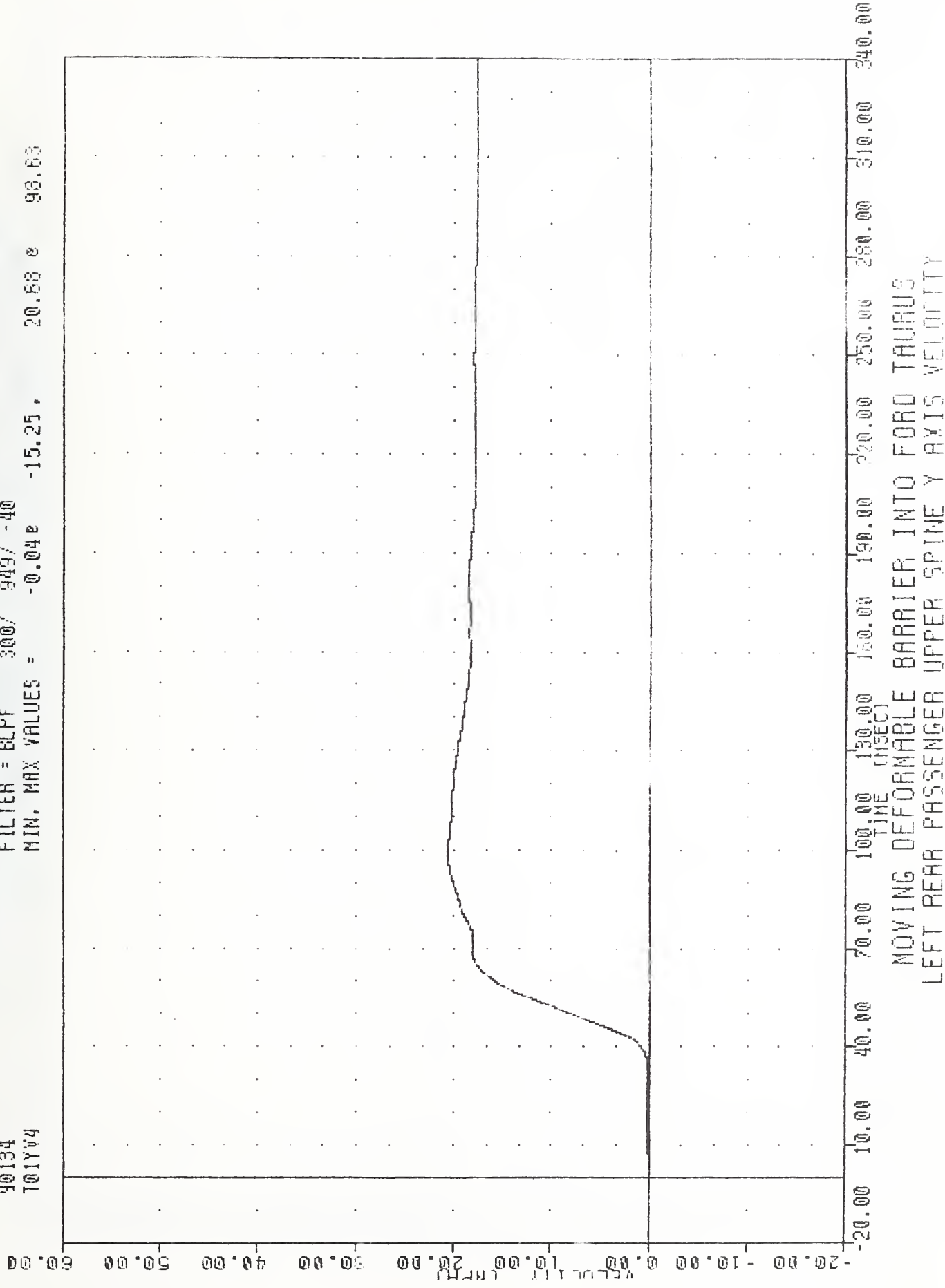


MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER UPPER SPINE V DYSACCELERATION

VRTC , 900514  
SI PROTECTION FROM VEHICLE  
90134  
T01YV4

FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -0.04e

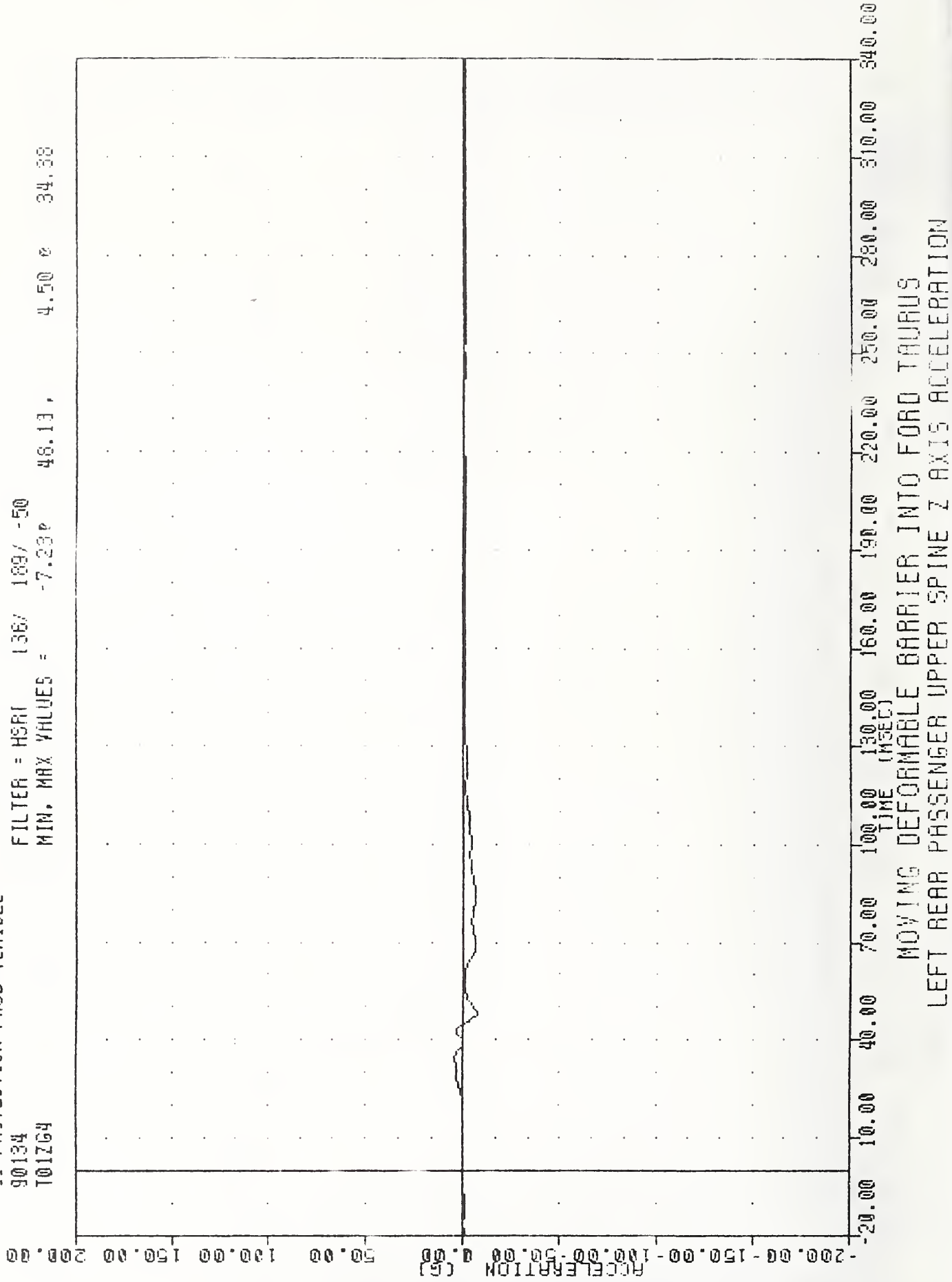
-15.25 , 20.68 e 98.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER UPPER SPINE Y AXIS VELOCITY

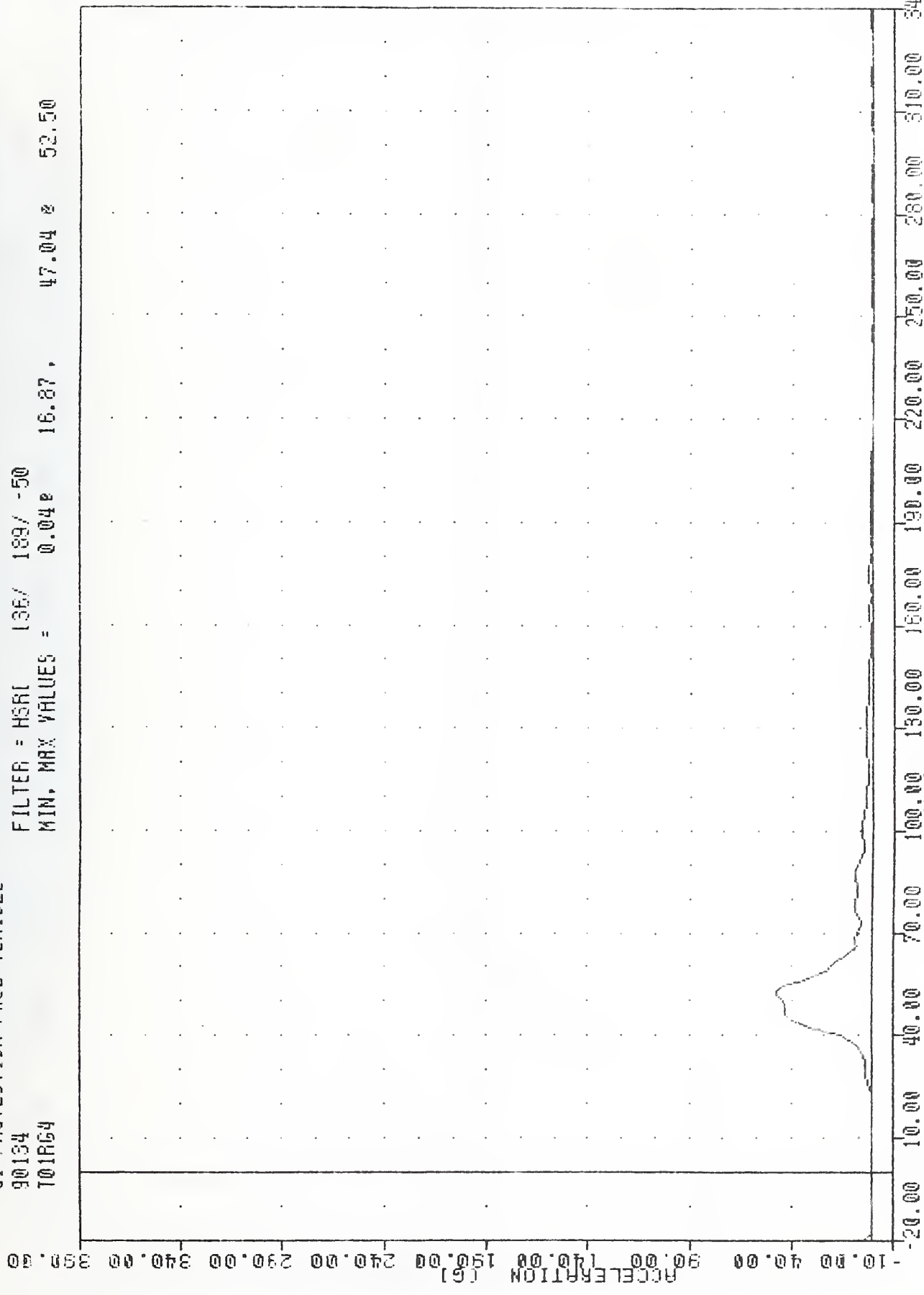
VRIC , 900514  
 SI PROTECTION FROM VEHICLE  
 90134  
 T01ZG4

FILTER = HSRI 136/ 189/ -50  
 MIN. MAX VALUES = -7.23P 48.13, 4.50 34.38



NRIC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
T01RG4

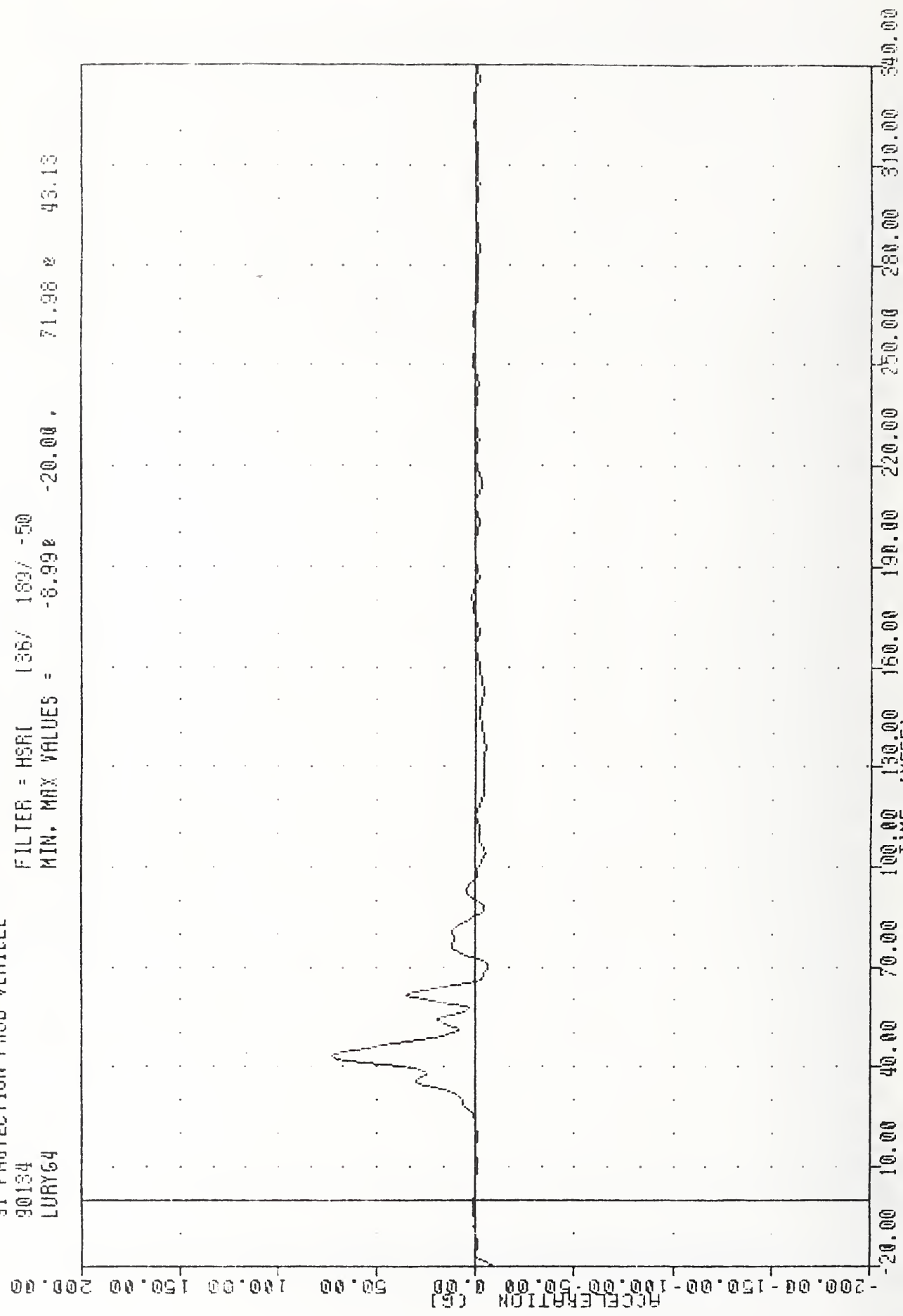
FILTER = HSRI 136/ 189/ -50  
MIN, MAX VALUES = 0.04e 16.87, 47.04 e 52.50



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER UPPER SPINE RESULTANT ACCELERATION

VRIC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LURY64

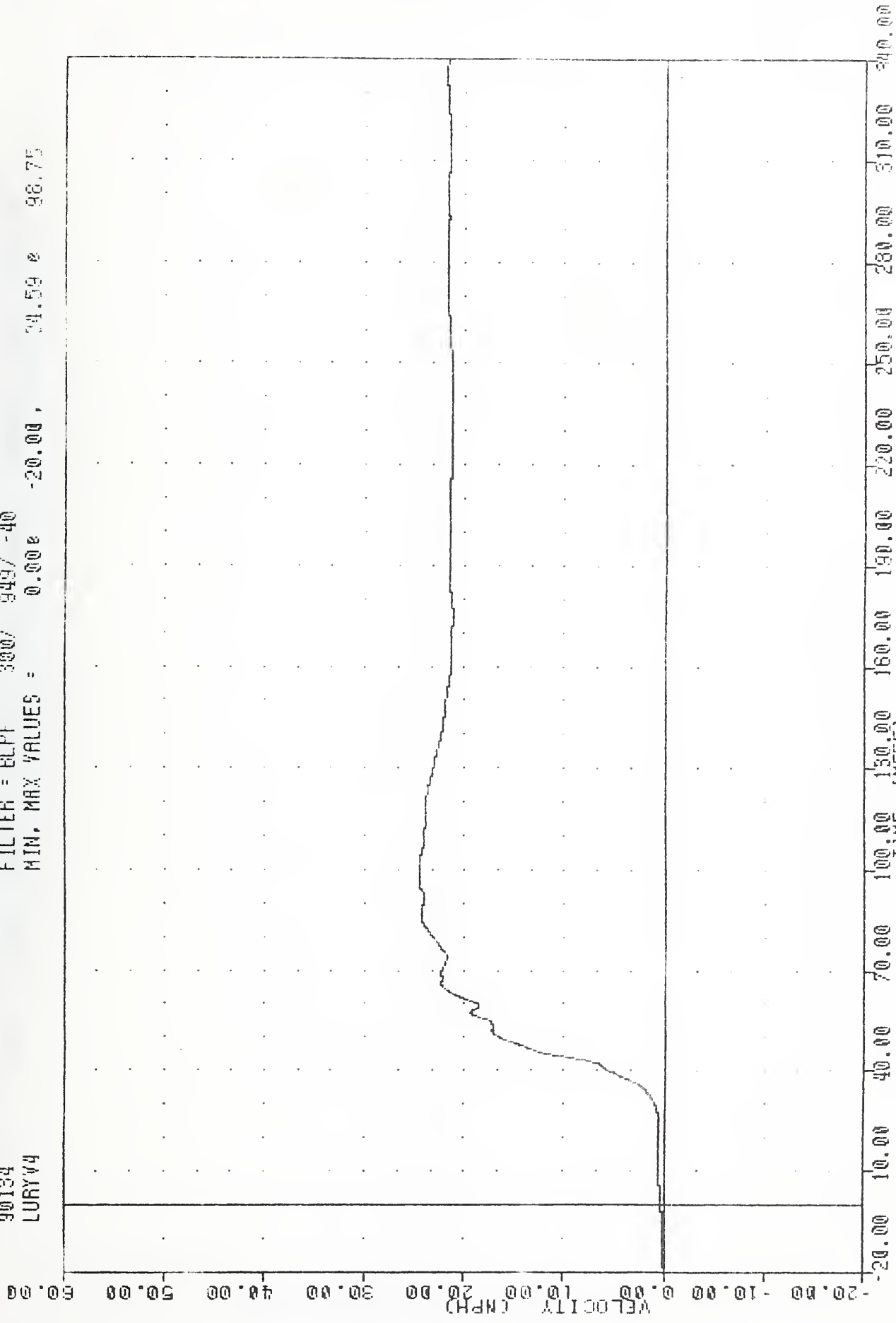
FILTER = HSRI 136/ 189/ -50  
MIN. MAX VALUES = -8.99% -20.00 , 71.98 % 43.13



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LEFT UPPER THORAX RIB Y AXIS ACCELERATION

VRTC . 900514  
SI PROTECTION PROD VEHICLE  
90134  
LURYV4

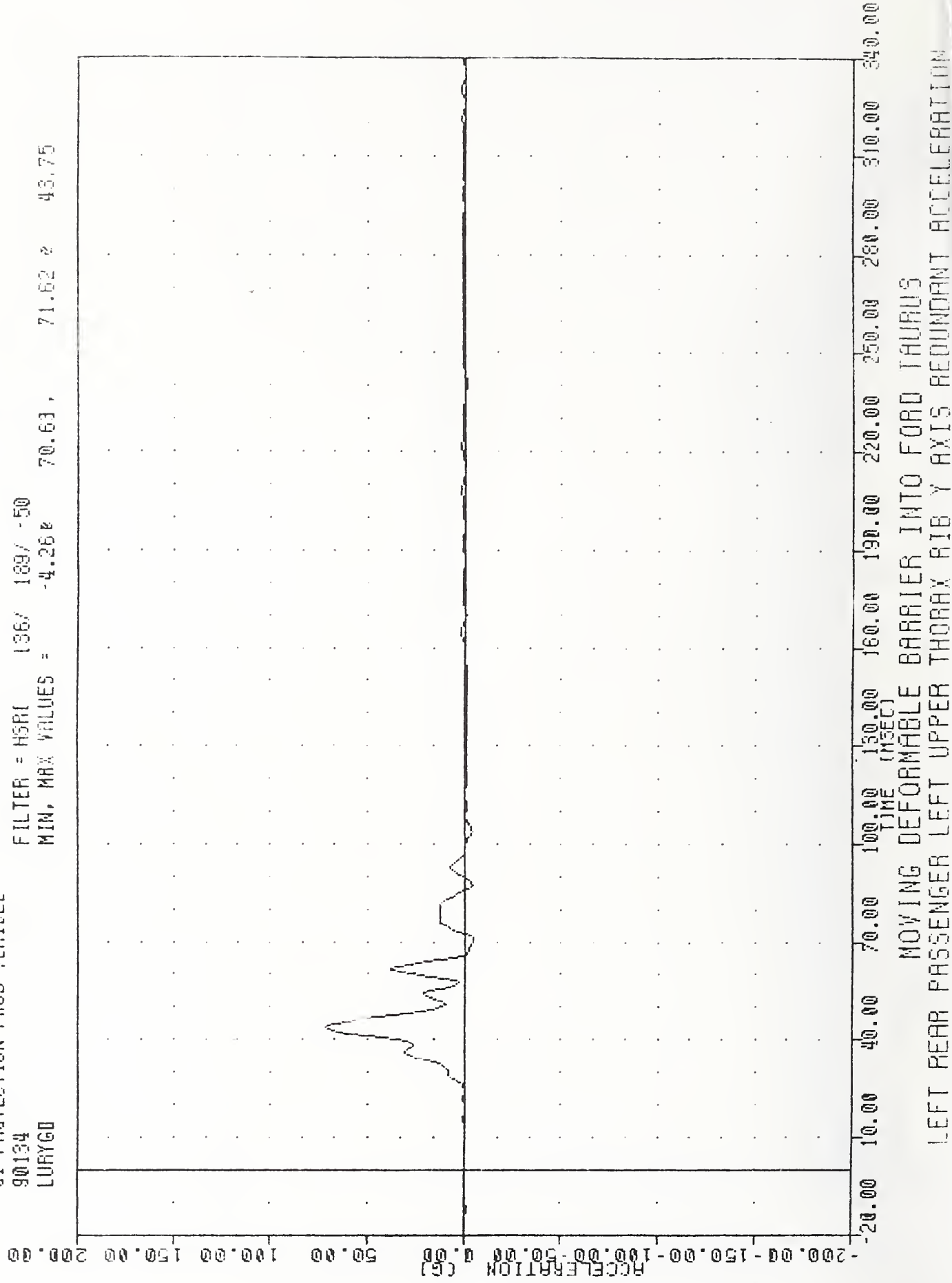
FILTER = BLPF 300/ 949/ -40  
MIN, MAX VALUES = 0.00e -20.00, 34.59 e 98.75



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LEFT UPPER THORAX R10 Y AXIS VELOCITY

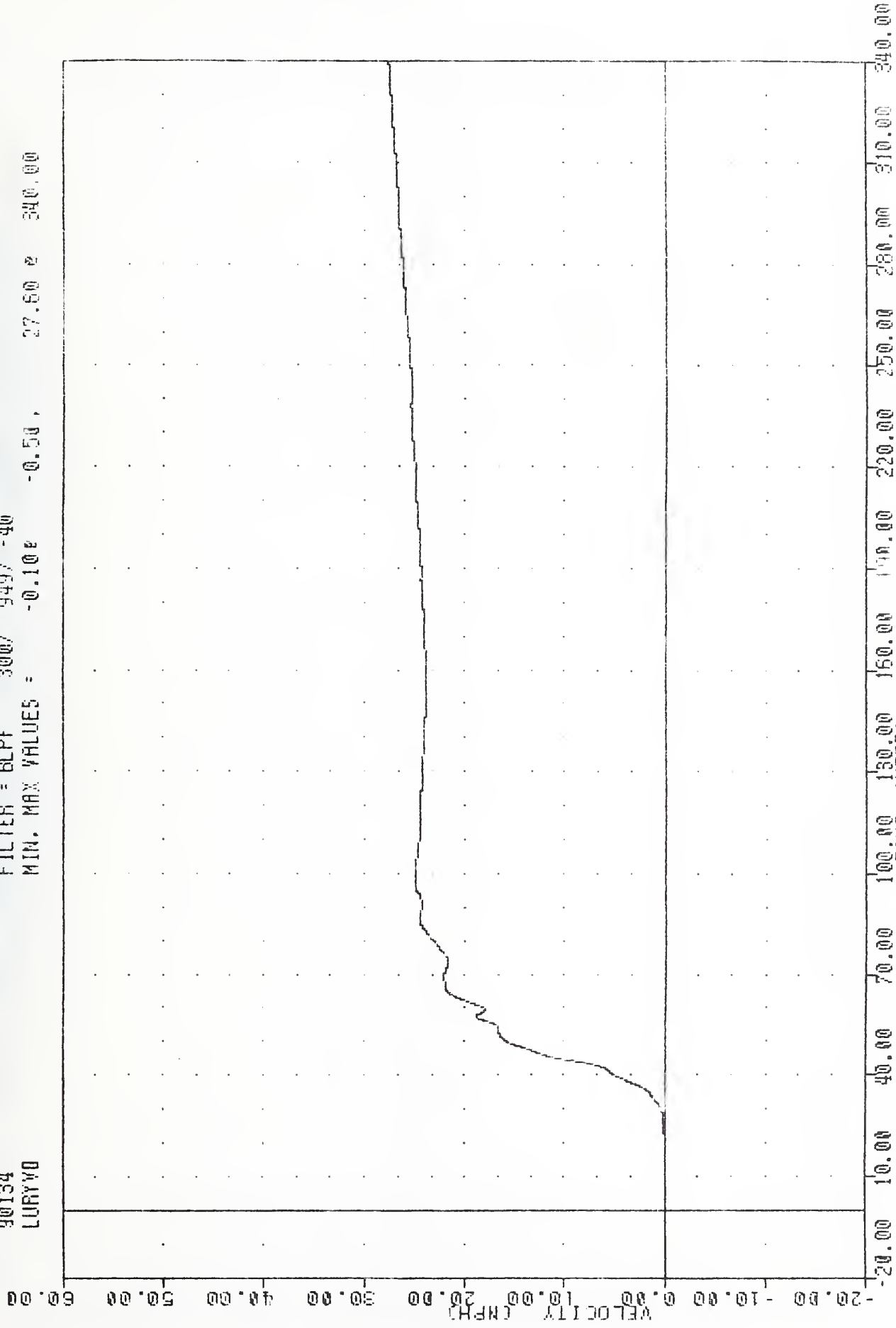
VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LURYGD

FILTER = HSR1 136/ -50  
MIN, MAX VALUES = -4.26 70.63 , 71.62 2 43.75



NRTC , 900514  
 S1 PROTECTION PR00 VEHICLE  
 90134  
 LURYV0

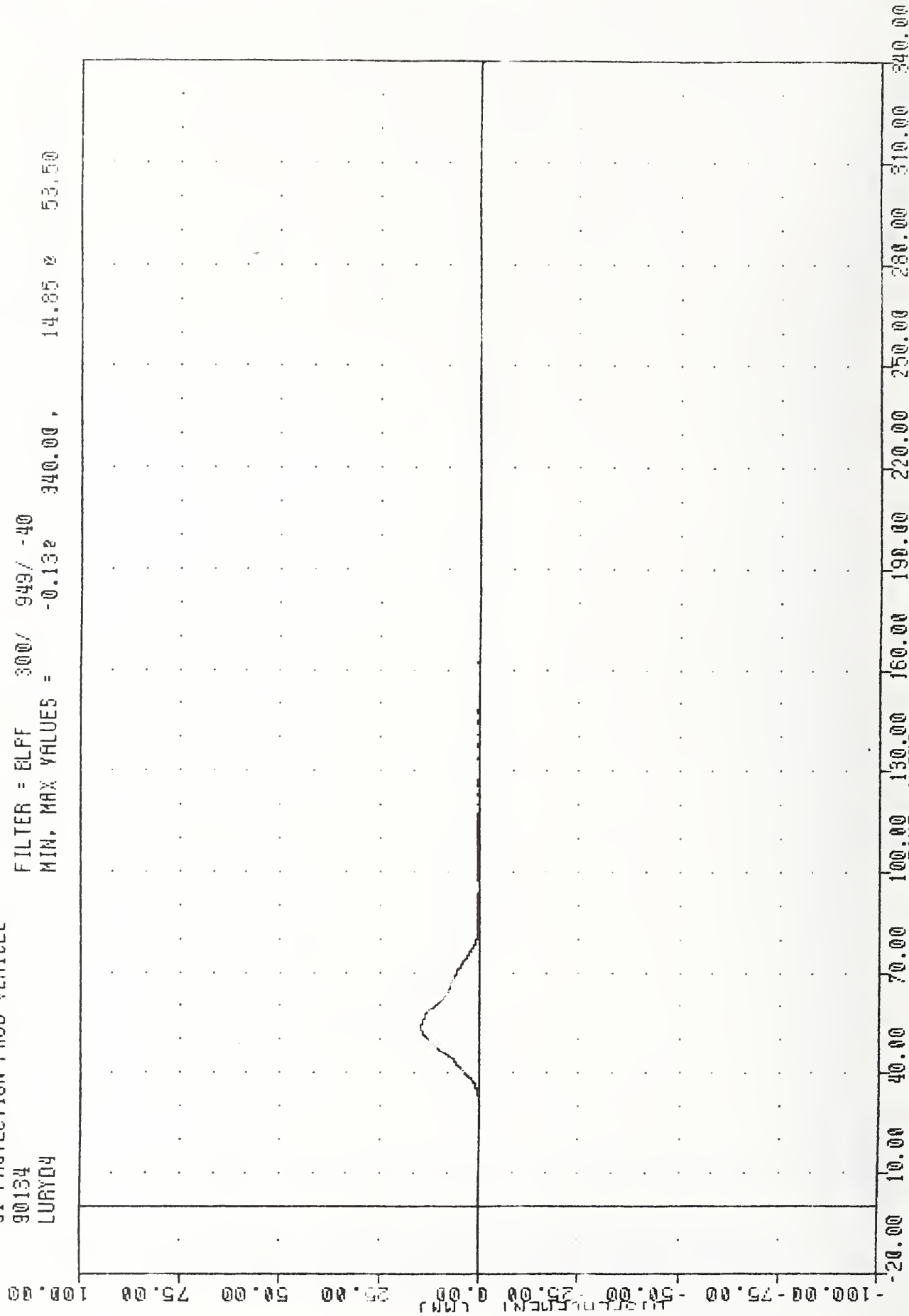
FILTER = BLPF 300/ 949/ -40  
 MIN. MAX VALUES = -0.10e -0.50 , 27.60 e 340.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER LEFT UPPER THORAX RIB Y AXIS REDUNDANT VELOCITY

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 LURYD4

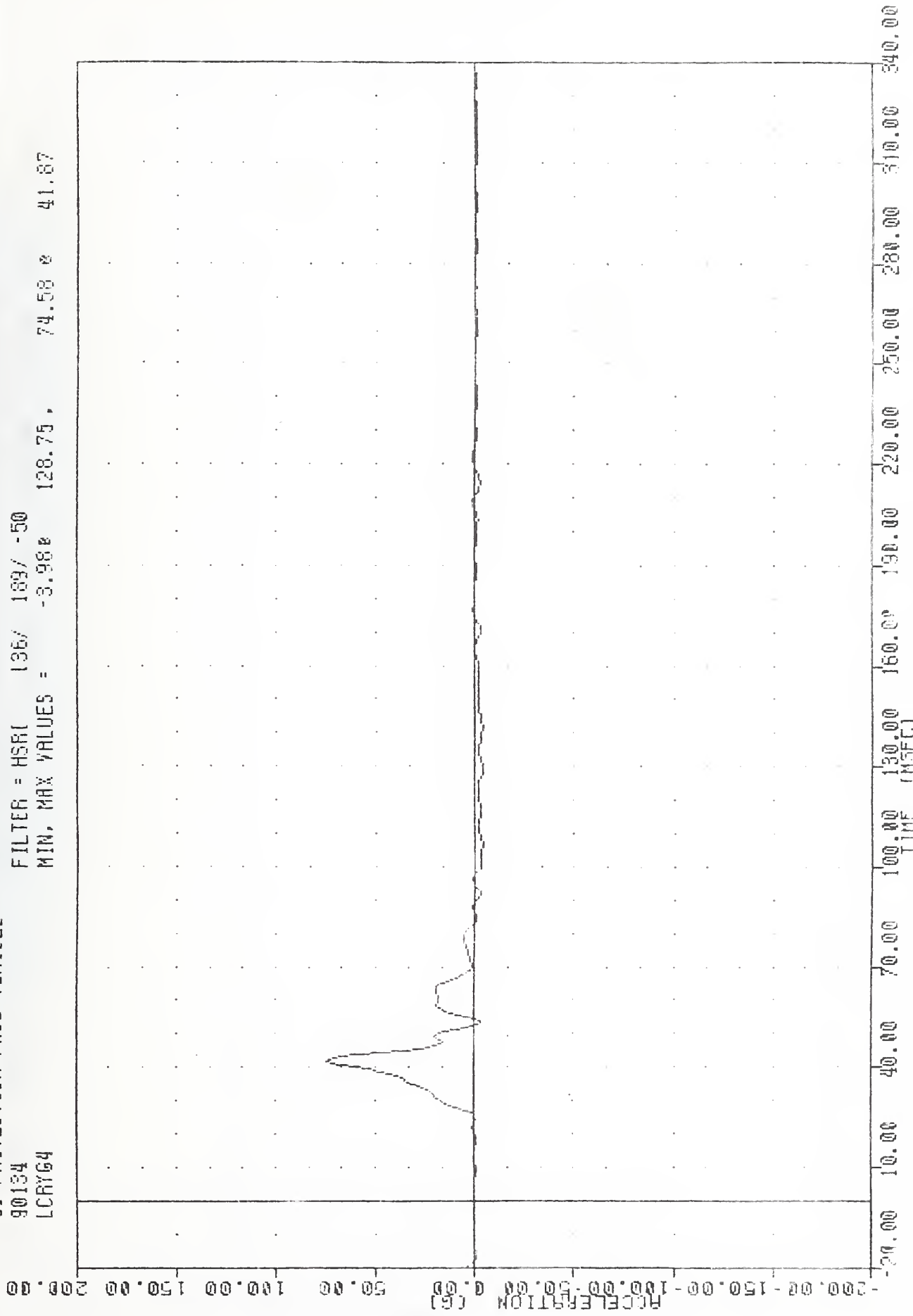
FILTER = ELFF 300/ 949/ -40  
 MIN. MAX VALUES = -0.132 340.00 , 14.85 % 53.50



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER LEFT UPPER THORAX RIB DISPLACEMENT

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LCRY64

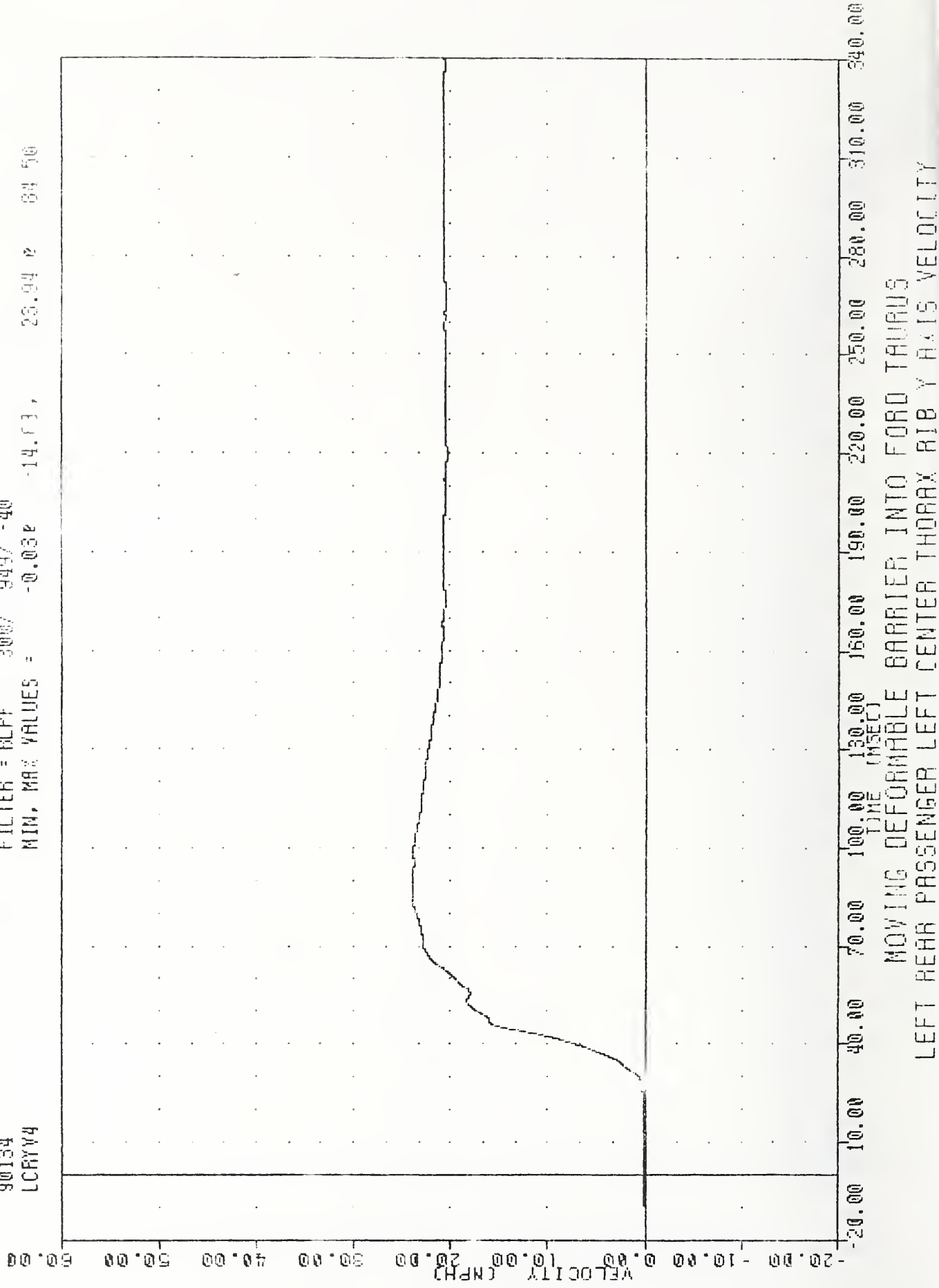
FILTER = HSRI 136/ 169/ -50  
MIN, MAX VALUES = -3.98e 128.75, 74.58 e 41.87



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LEFT CENTER THORAX RIB Y AXIS ACCELERATION

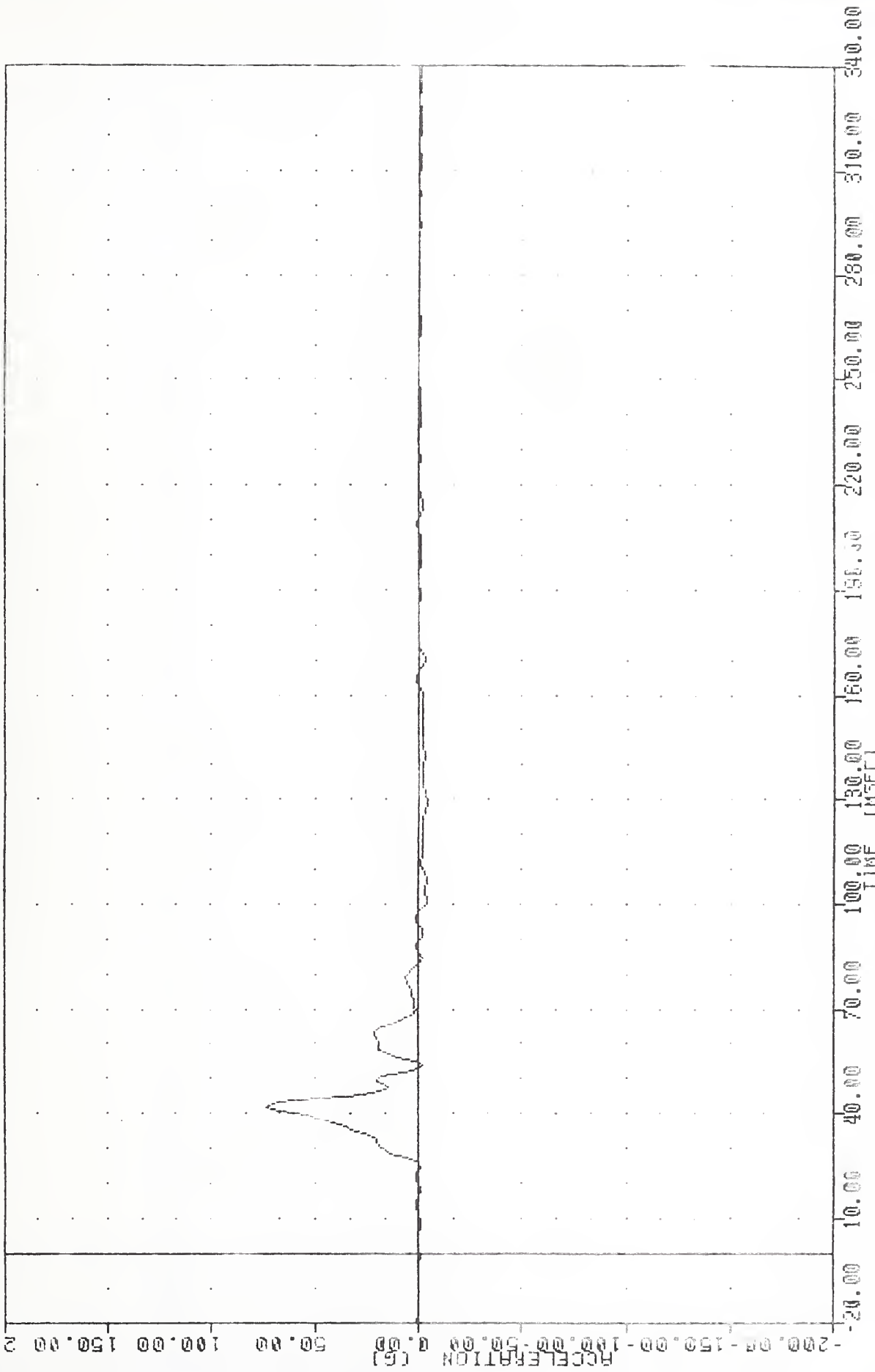
WRTC  
 SI PROTECTION PROD VEHICLE  
 90134  
 LCRYV4

FILTER = BLFF 3007 9497 -40  
 MIN. MAX VALUES = -0.032 26.94 2 34 50



VRTC , 900514  
 SI PROTECTION PROG VEHICLE  
 90134  
 LCRY60

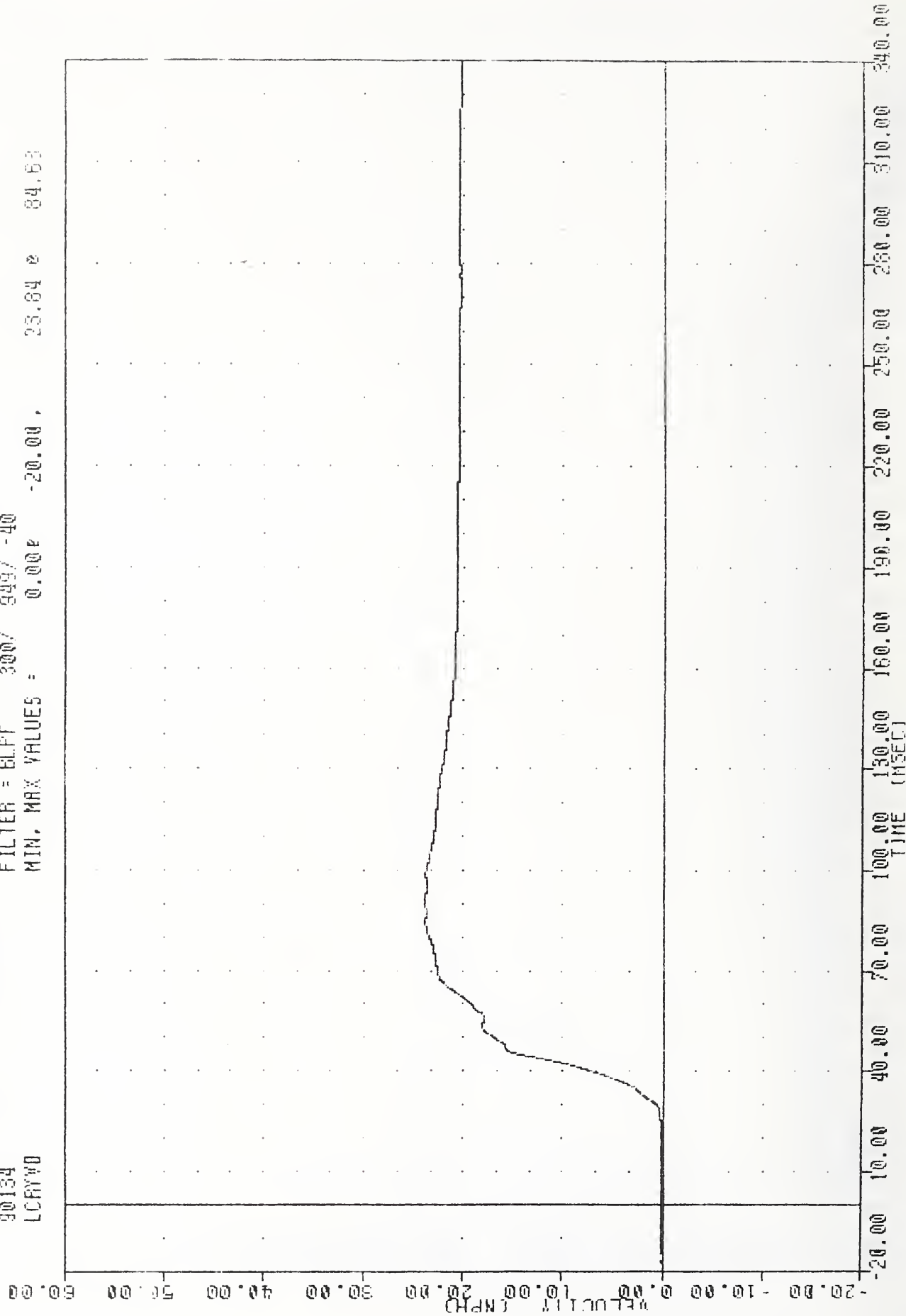
FILTER = HSRI 136/ 189/ -50  
 MIN. MAX VALUES = -4.04 100.63 , 73.52 41.87



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER LEFT CENTER THORAX RIB Y AXIS REDUNDANT ACCEL

VRIC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 LCRVWD

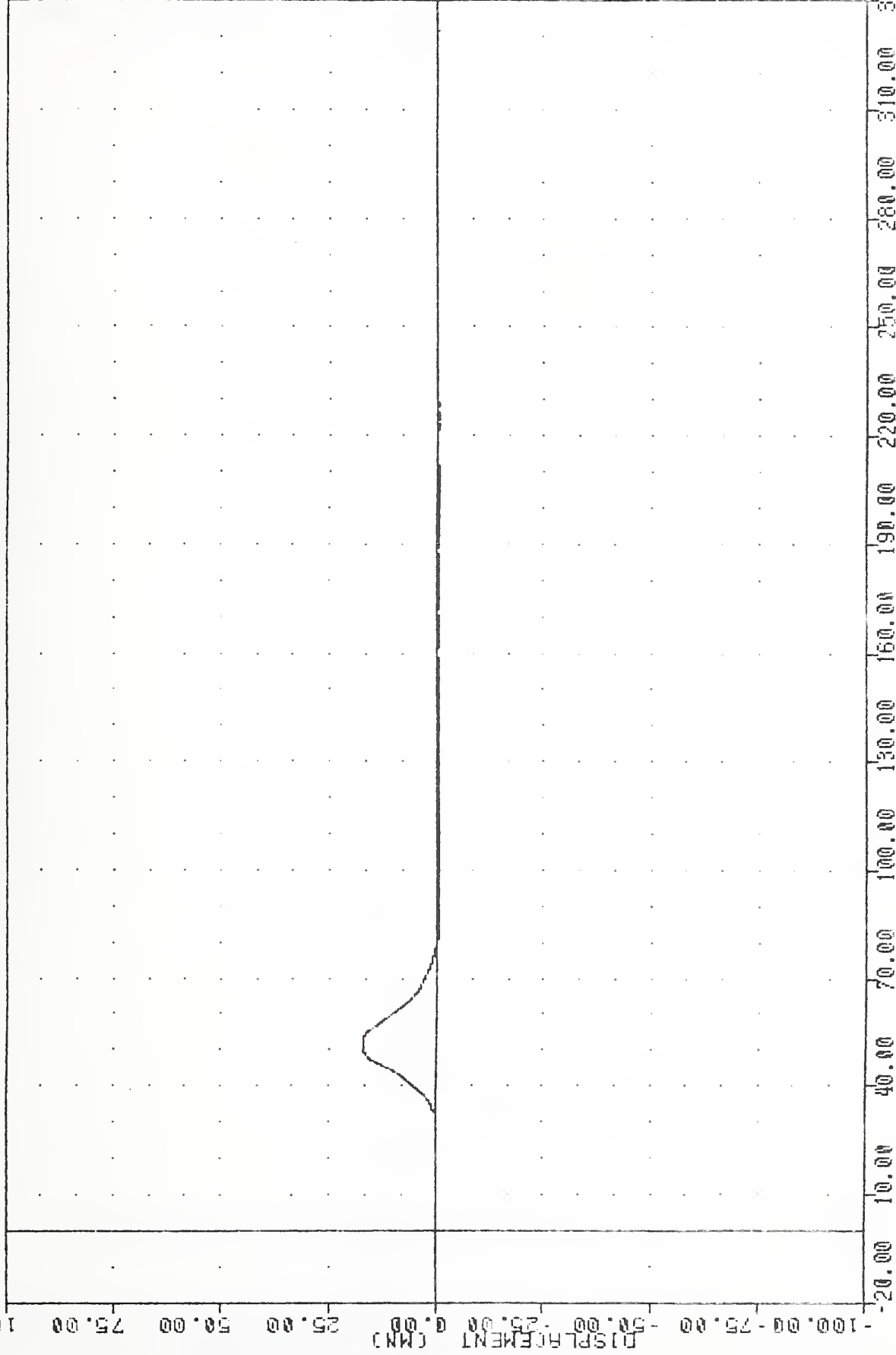
FILTER = BLPF 300/ 949/ -40  
 MIN. MAX VALUES = 0.00E -20.00 , 23.84 E 84.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER LEFT CENTER THORAX RIB Y AXIS REDUNDANT VELOCITY

NRIC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LCRYD4

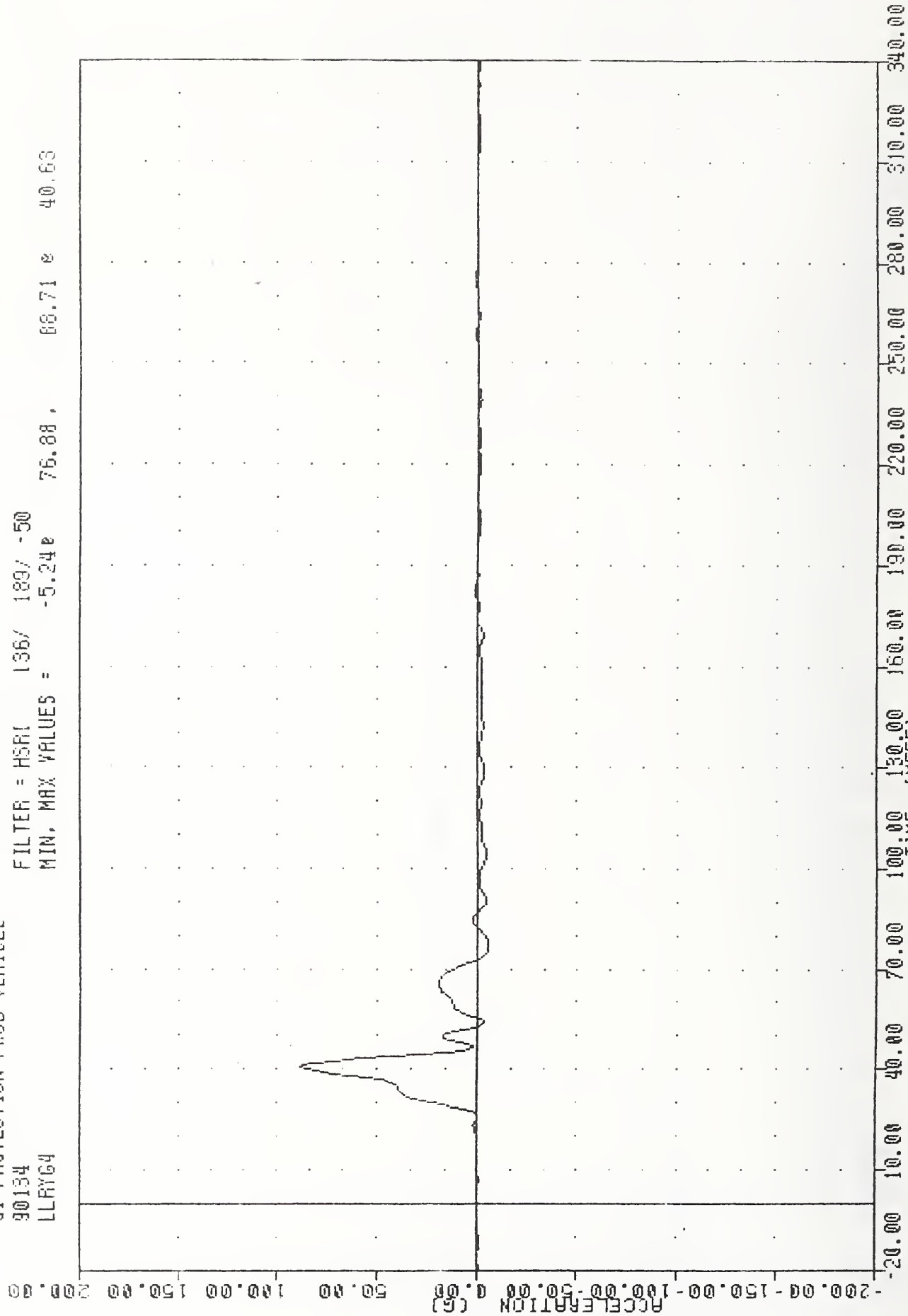
FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -0.410 116.63, 17.32 0 50.88



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LEFT CENTER THORAX RIB DISPLACEMENT

VRTC , 900514  
SI PROTECTION PRDD VEHICLE  
90134  
LLRY64

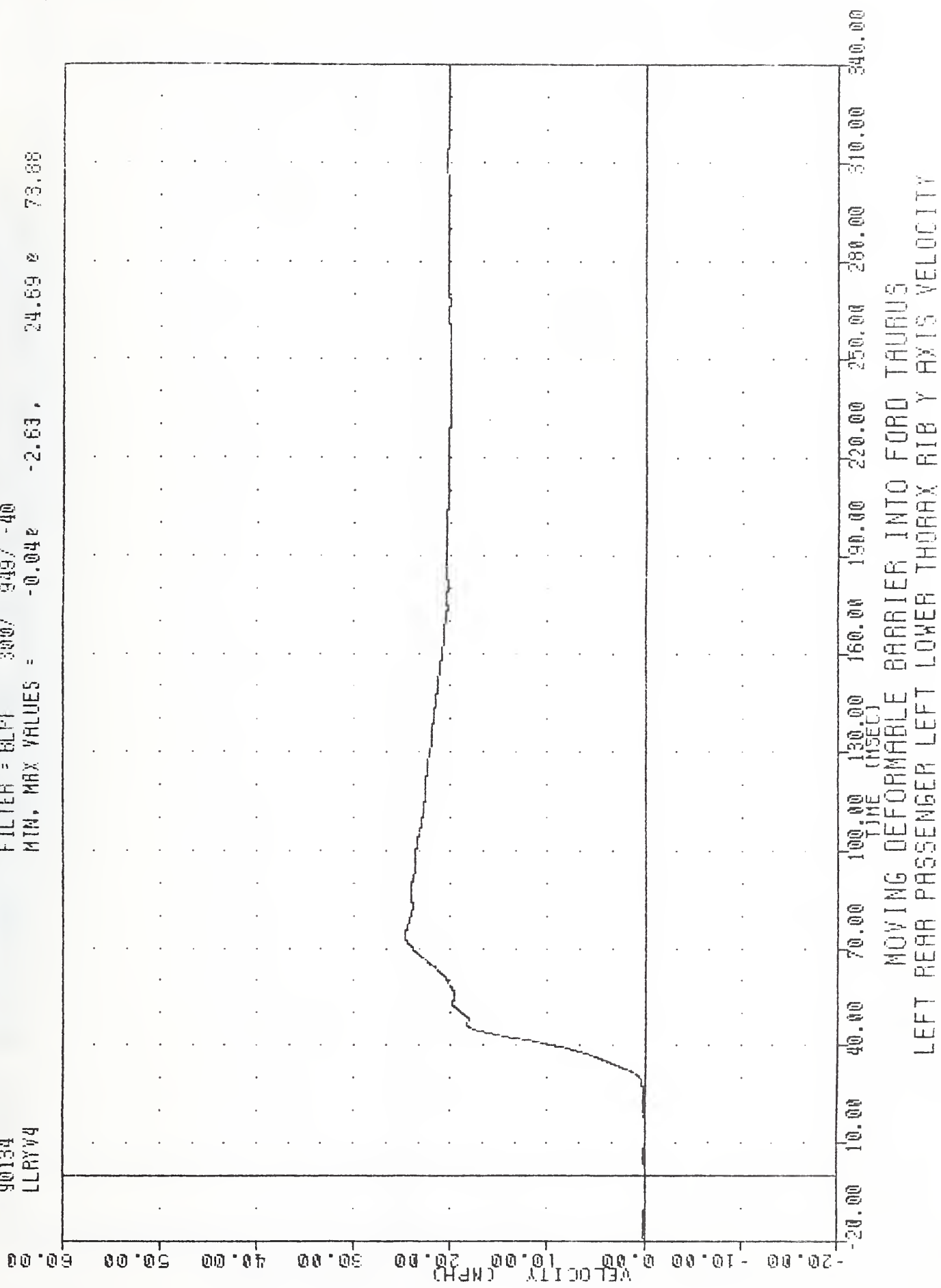
FILTER = HSR1 136/ 189/ -50  
MIN. MAX VALUES = -5.24e 76.88 , 88.71 e 40.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LEFT LOWER THORAX RIB Y AXIS ACCELERATION

VRTC . 900514  
 SI PROTECTION PROO VEHICLE  
 90134  
 LLRYV4

FILTER = BLFF 300/ 949/ -40  
 MIN. MAX VALUES = -0.048 -2.63, 24.69 0 73.68

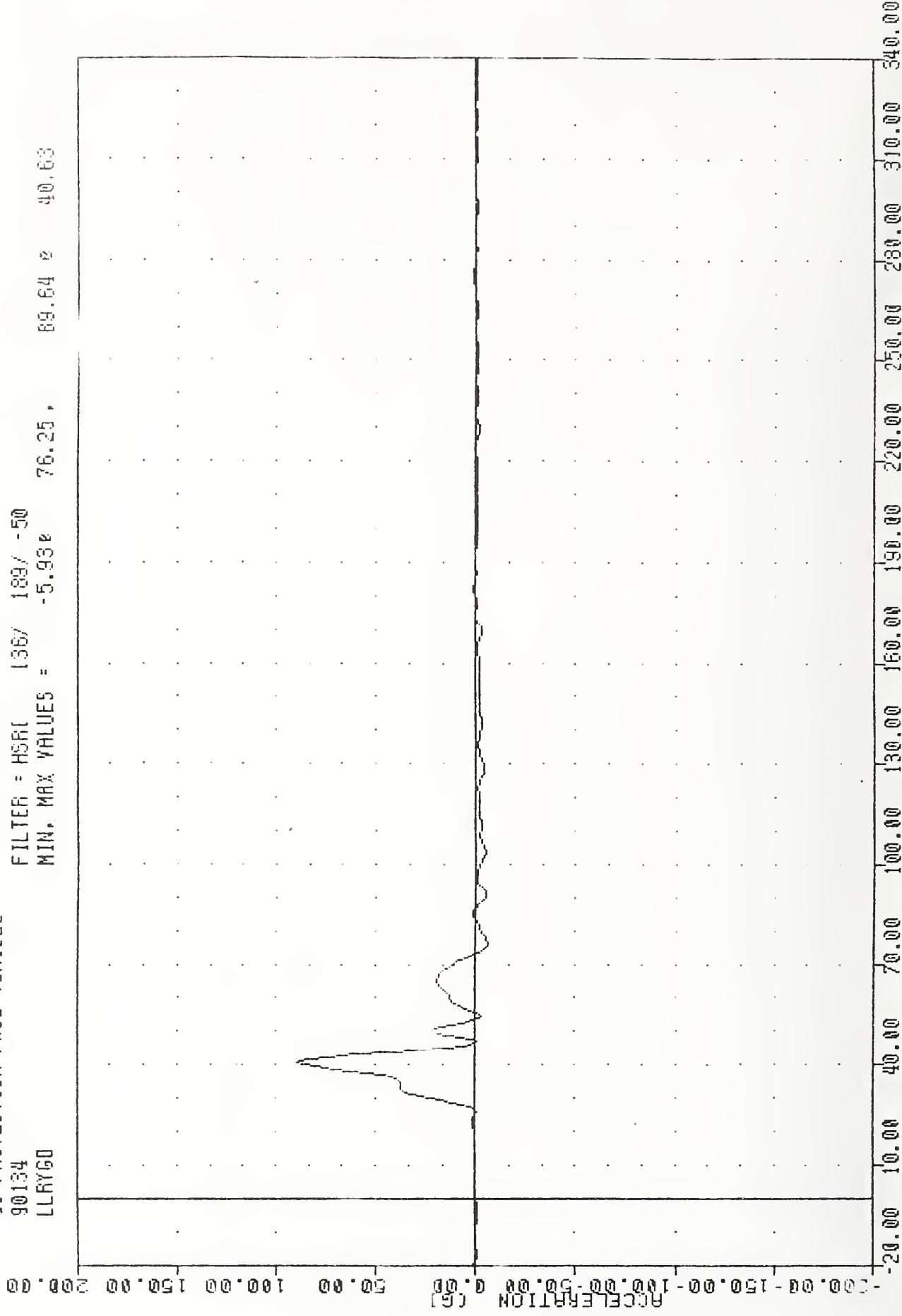


MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER LEFT LOWER THORAX RIB Y AXIS VELOCITY

VRTC . 900514  
SI PROTECTION PROD VEHICLE  
90134  
LLRY60

FILTER = HSR1 1367 1897 -50  
MIN. MAX VALUES = -5.93e 76.25 ,

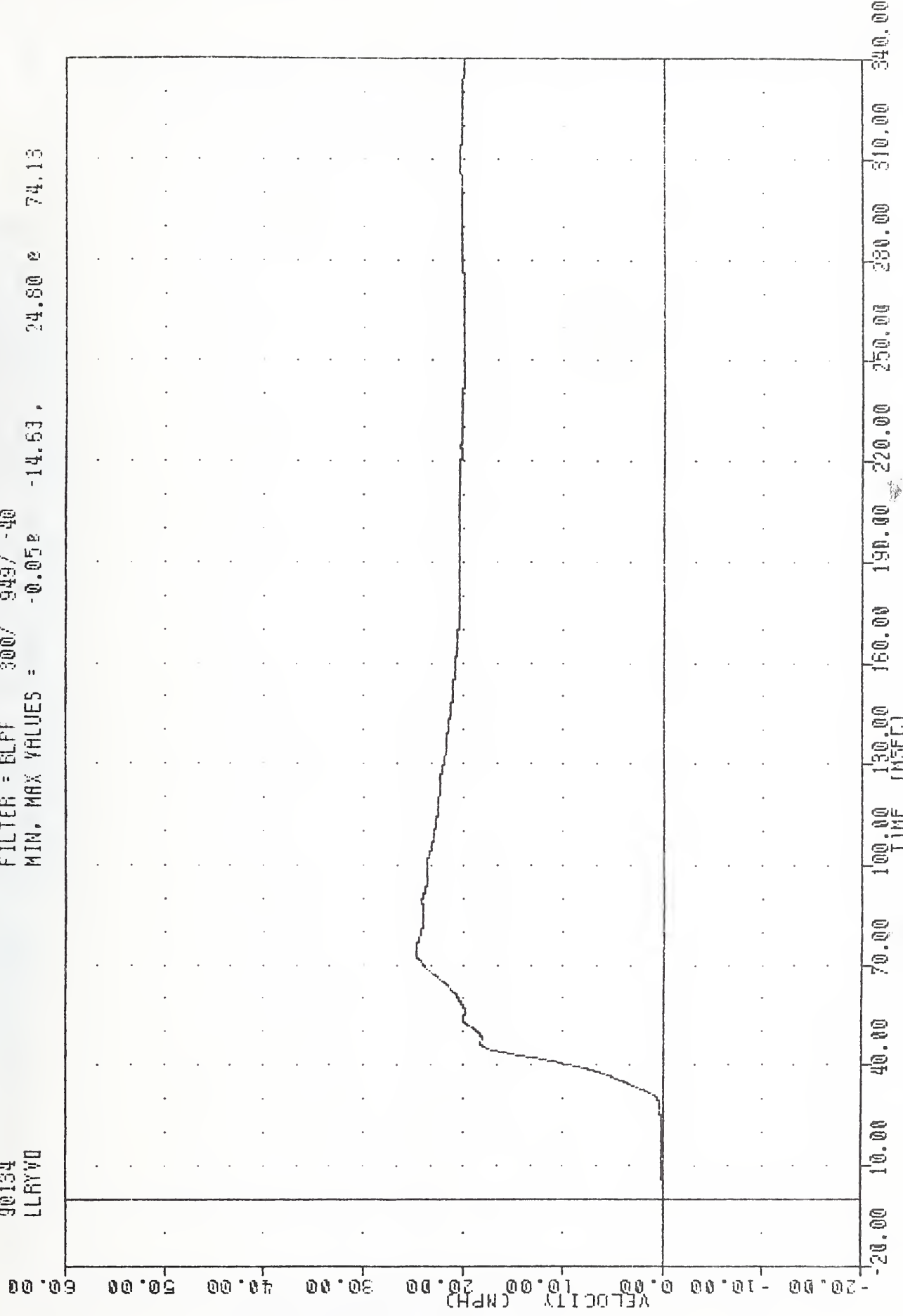
89.64 e 40.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LEFT LOWER THORAX RIB Y AXIS REDUNDANT ACCELERATION

VRIC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LLRYVO

FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -0.052 -14.63 , 24.80 2 74.13

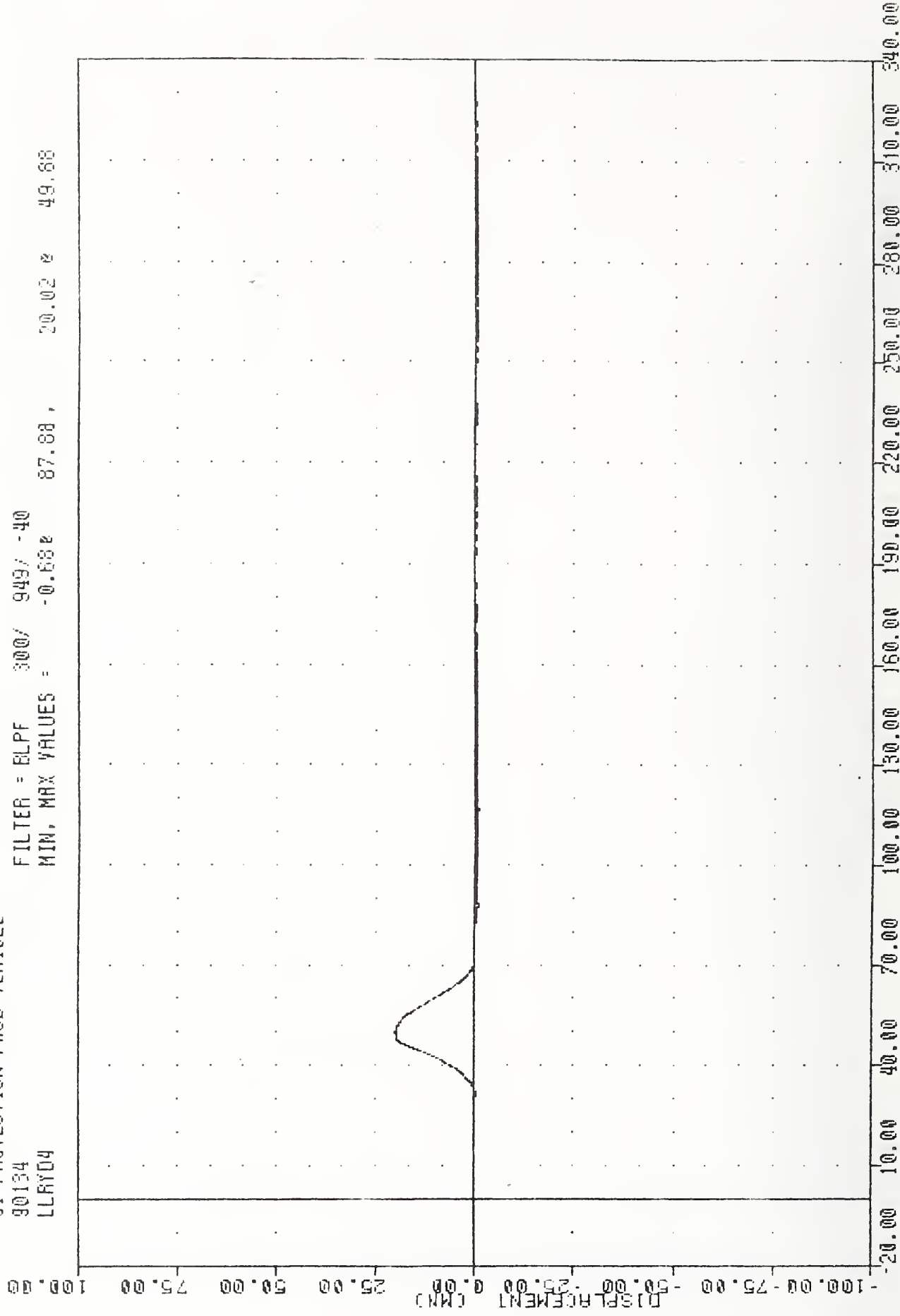


MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LEFT LOWER THORAX RIB Y AXIS REDUNDANT VELOCITY

VRAC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 LLRYD4

FILTER = ELPF 300/ 949/ -40  
 MIN, MAX VALUES = -0.68e 87.88 ,

20.02 e 49.88

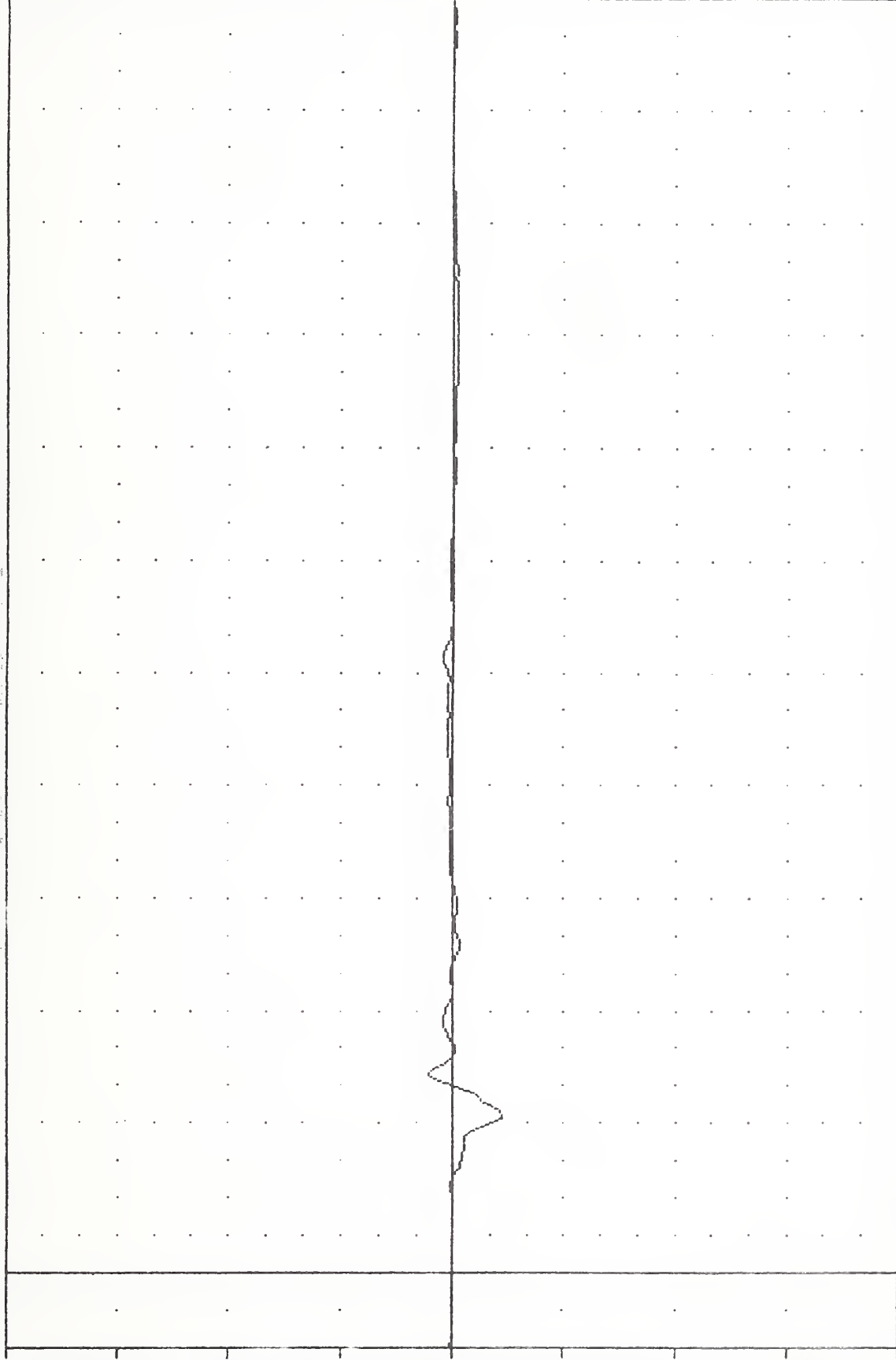


MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER LEFT LOWER THORAX RIB DISPLACEMENT

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
T12XG4

FILTER = HSRI 136/ 189/ -50  
MIN. MAX VALUES = -22.41 41.87, 10.40 53.12

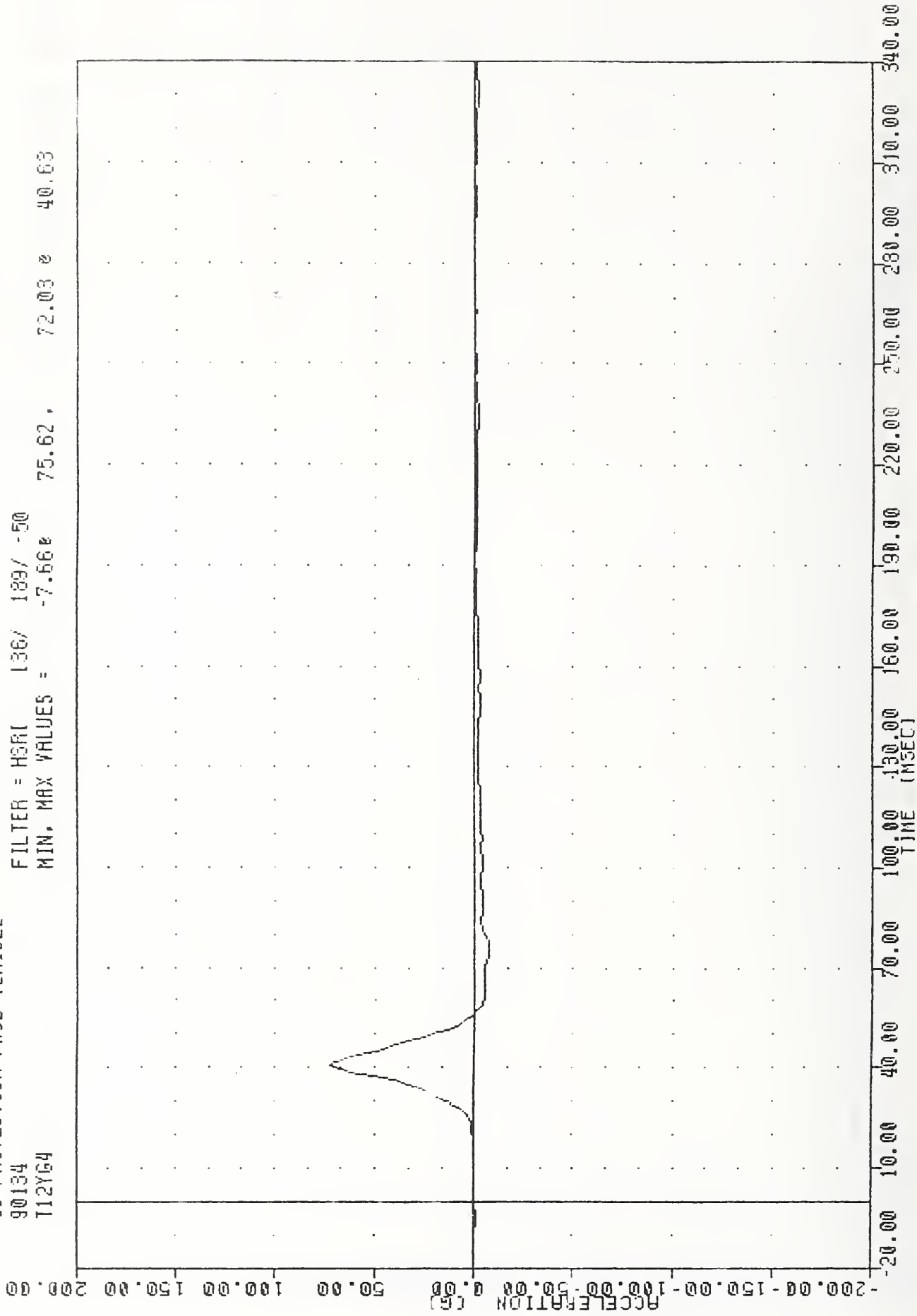
ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LOWER SPINE X AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
T12Y64

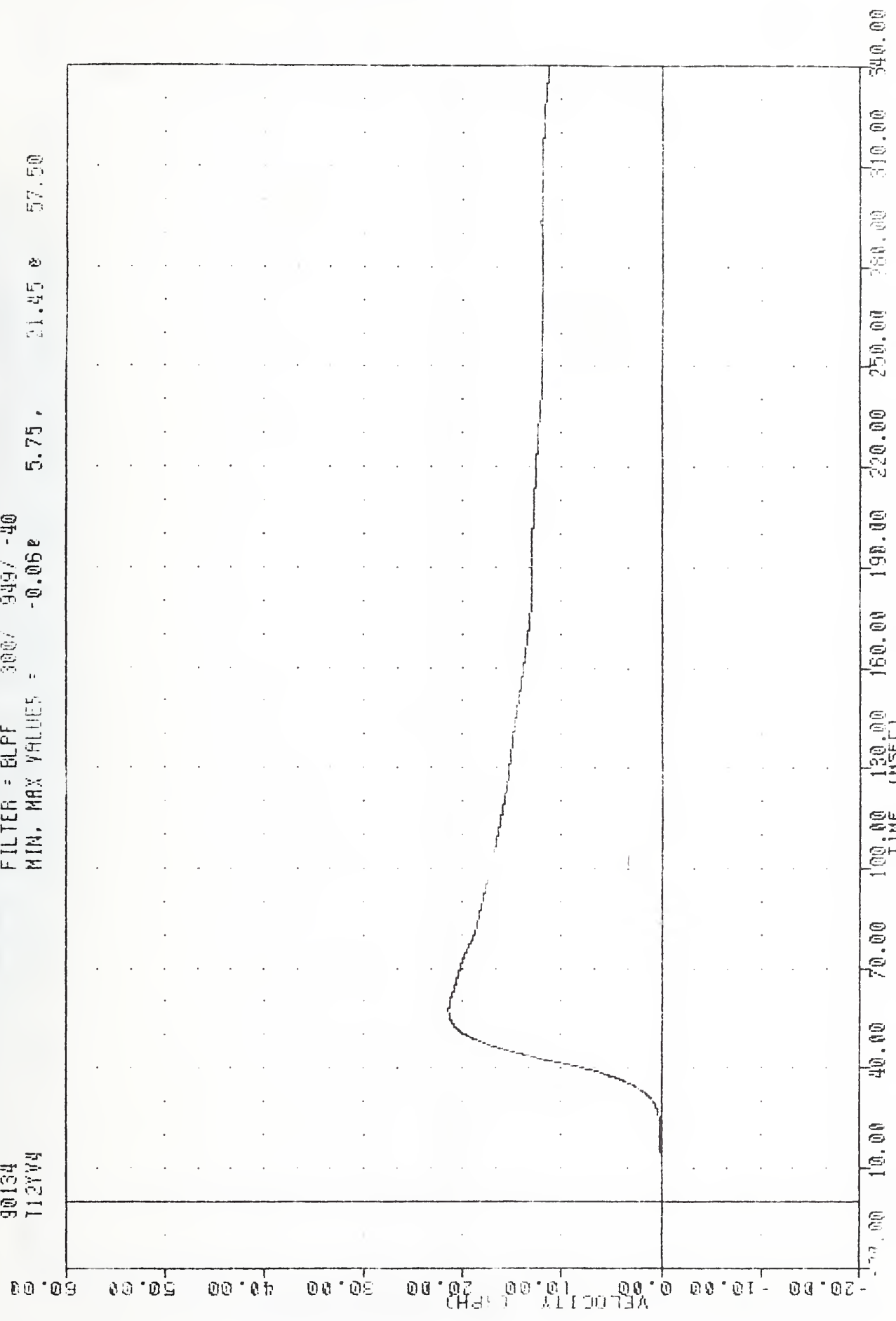
FILTER = HGR1 136/ 129/ -50  
MIN. MAX VALUES = -7.66e 75.62, 72.03 e 40.63



VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
T12VY4

FILTER = BLPF 3007 9497 -40  
MIN. MAX VALUES = -0.06e 5.75,

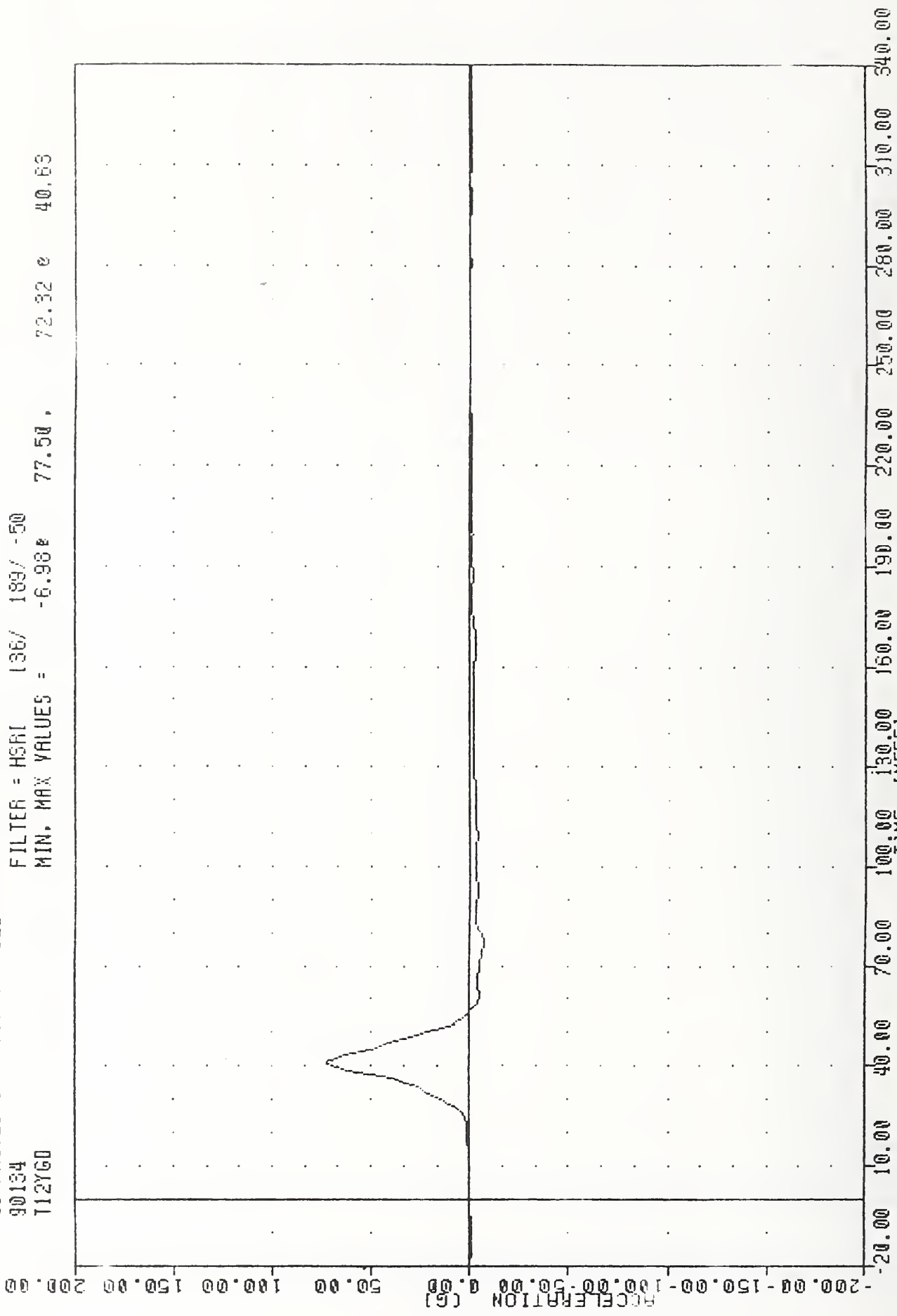
21.45 e 57.50



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LOWER SPINE Y AXIS VELOCITY

VRTC , 900514  
 SI PROTECTION PADD VEHICLE  
 90134  
 112Y60

FILTER = HSRI 136/ 189/ -50  
 MIN. MAX VALUES = -6.98 77.50 , 72.92 40.63

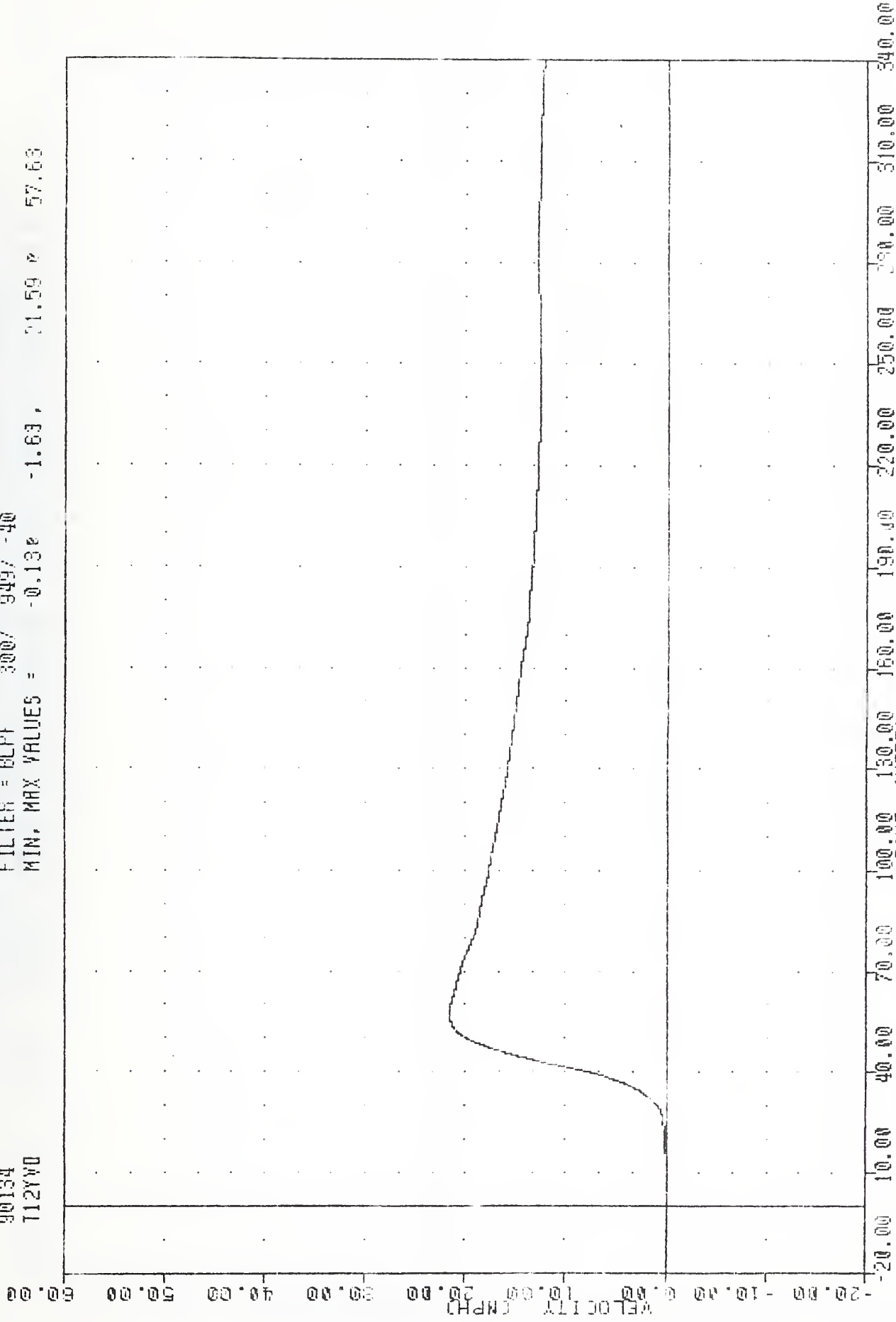


MOVING DEFORMABLE BARRIER INTO FORD TAURUS

LEFT REAR PASSENGER LOWER SPINE Y AXIS REDUNDANT ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
T12YV0

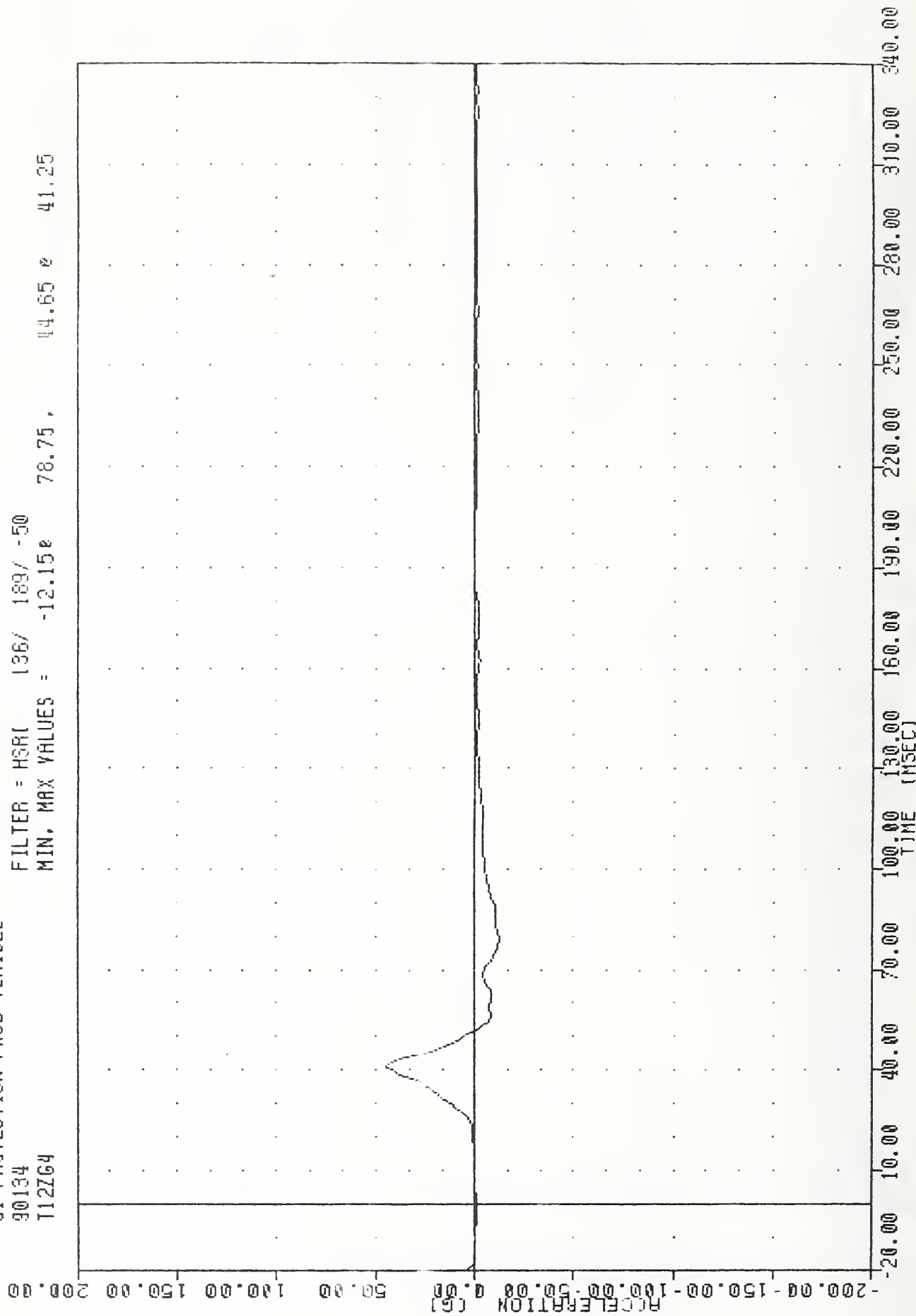
FILTER = BLFF 300/ 949/ -40  
MIN. MAX VALUES = -0.13e -1.63, 21.59 e 57.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LOWER SPINE Y AXIS REDUNDANT VELOCITY

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 T12Z64

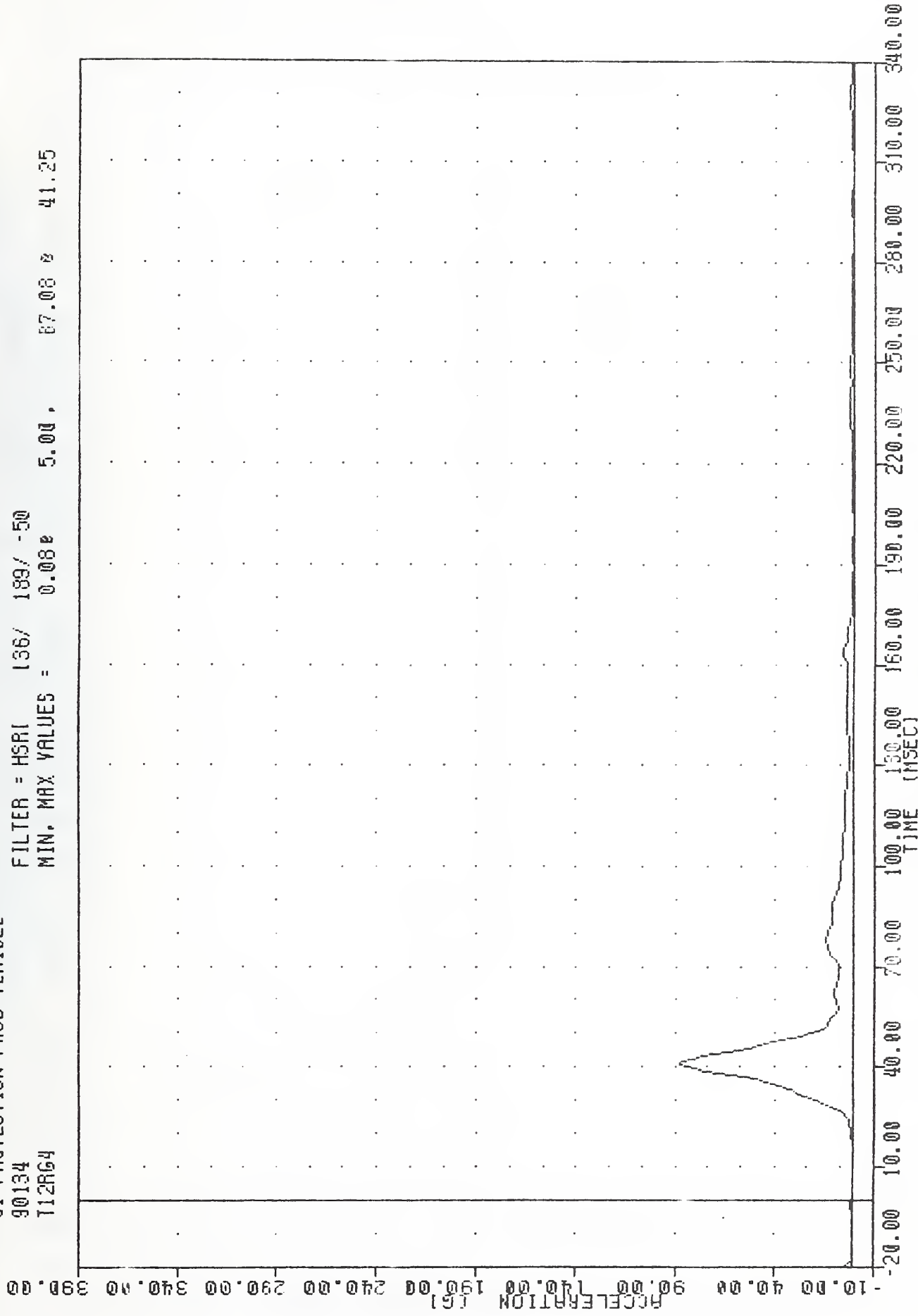
FILTER = HSR 136/ 189/ -50  
 MIN. MAX VALUES = -12.15e 78.75 , 44.65 e 41.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER LOWER SPINE Z AXIS ACCELERATION

VRIC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
T12R64

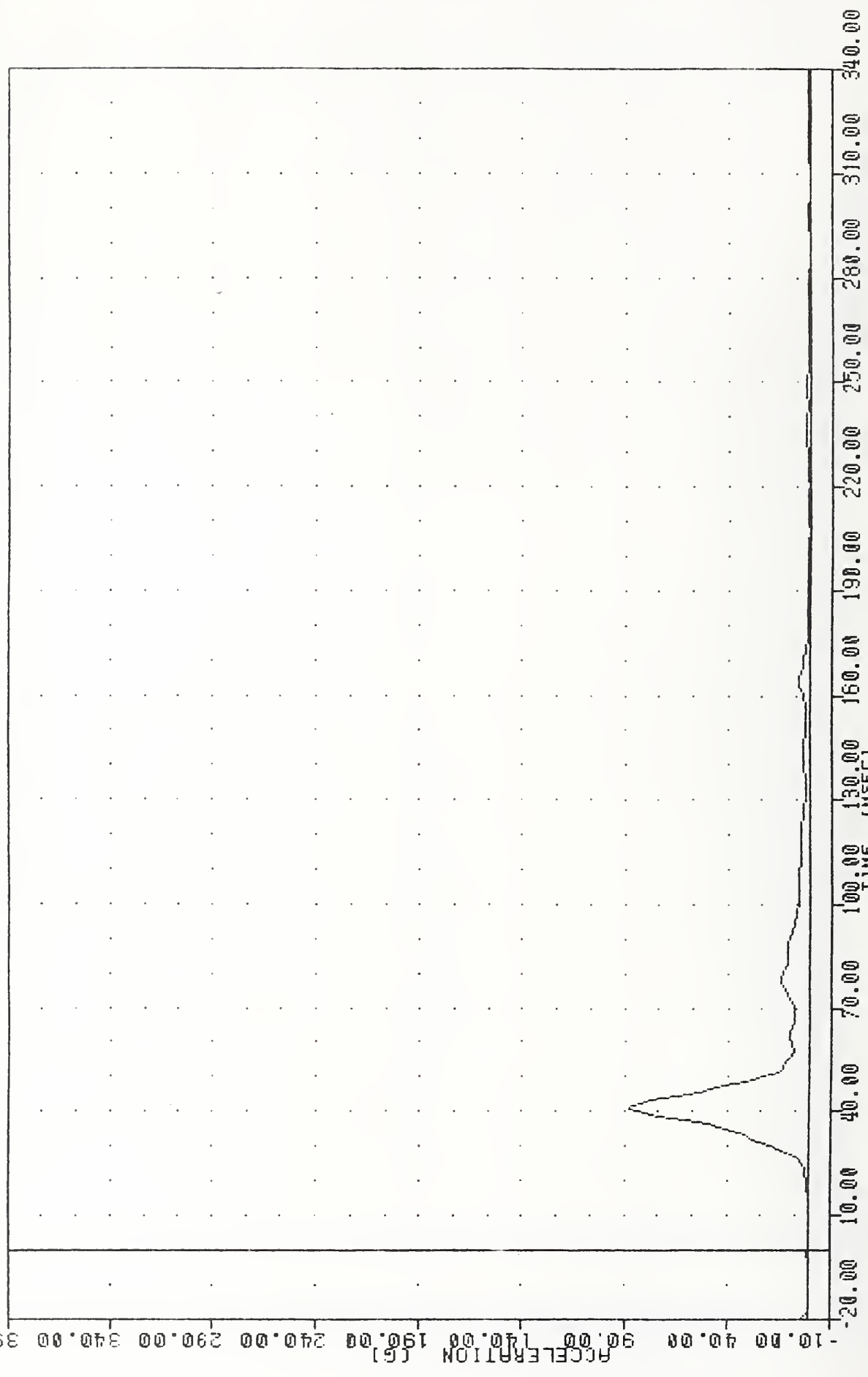
FILTER = HSRI 136/ 189/ -50  
MIN. MAX VALUES = 0.08e 5.0d , 67.08 e 41.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LOWER SPINE RESULTANT ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
T12R60

FILTER = HSRI 136/ 189/ -50  
MIN, MAX VALUES = 0.17e 4.38 , 87.53 e 41.25

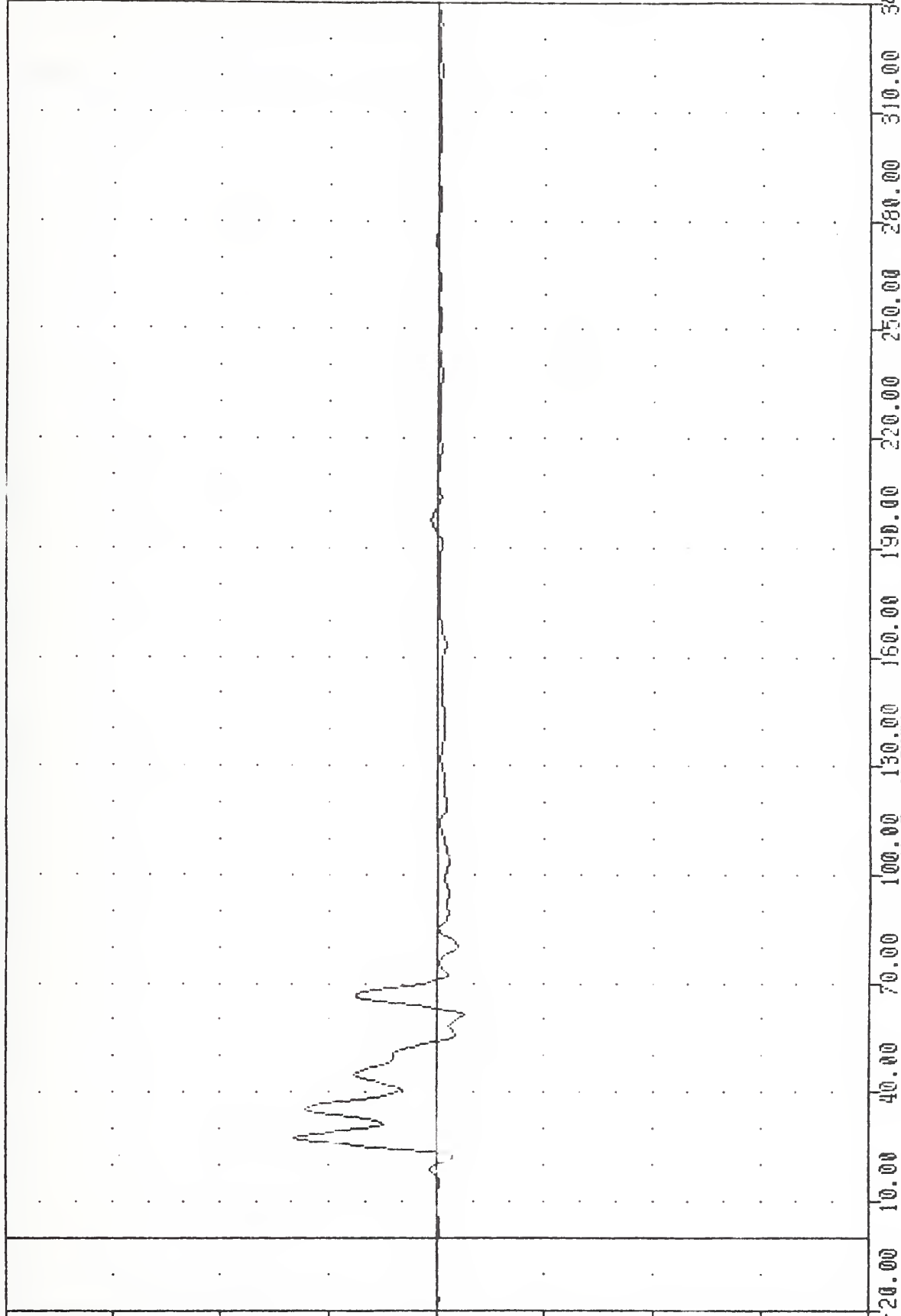


MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LOWER SPINE REDUNDANT RESULTANT ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LUAYG4

FILTER = HSR1 136/ 189/ -50  
MIN, MAX VALUES = -11.97e 61.25, 65.76 e 27.50

ACCELERATION (G)

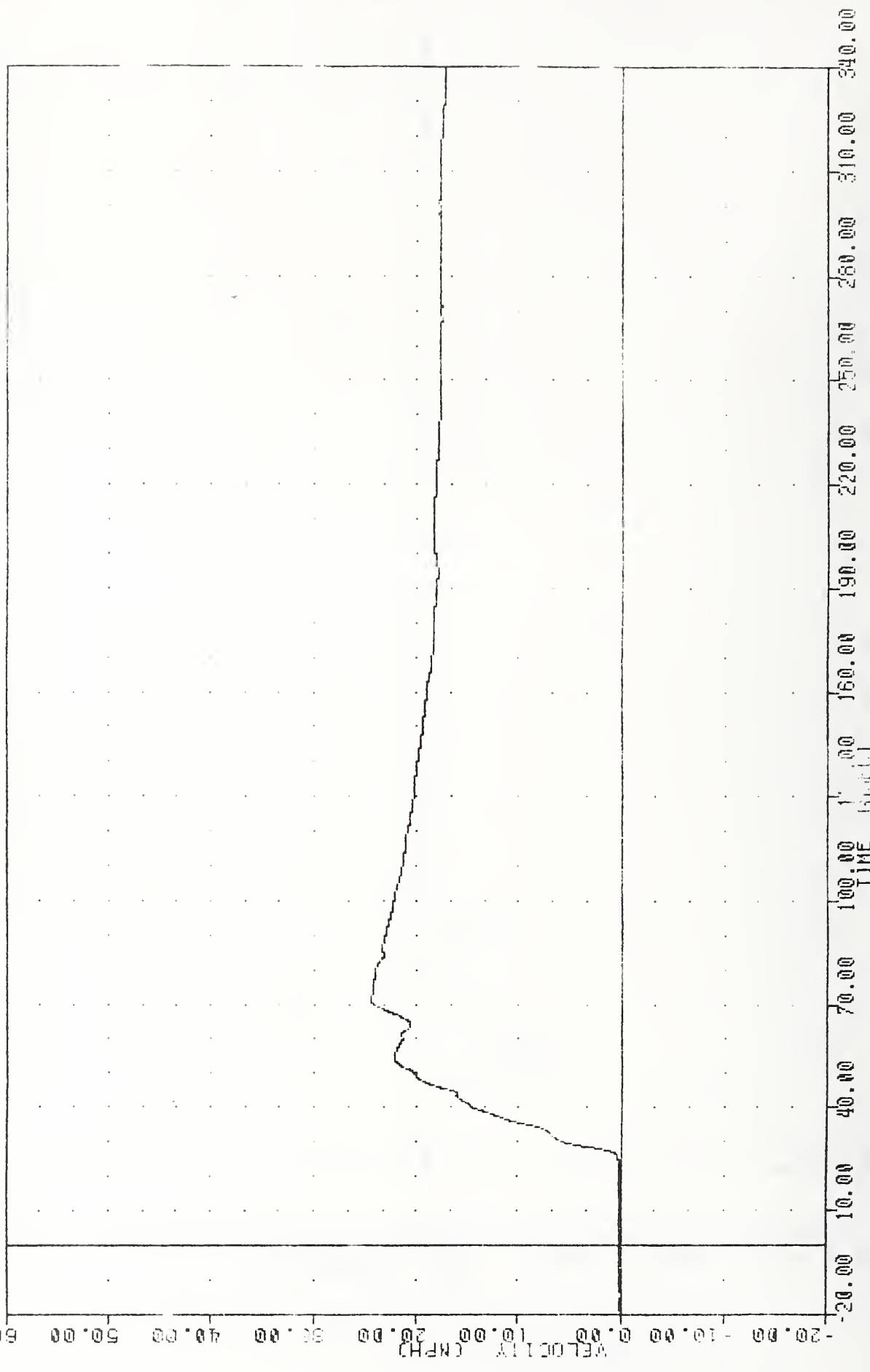


MOVING DEFORMABLE BARRIER INTO FORD TAURUS

LEFT REAR PASSENGER LEFT UPPER ARMORFN RIB Y AXIS ACCELERATION

1111C  
 SI PROTECTION PROD VEHICLE  
 90134  
 LURAYV4

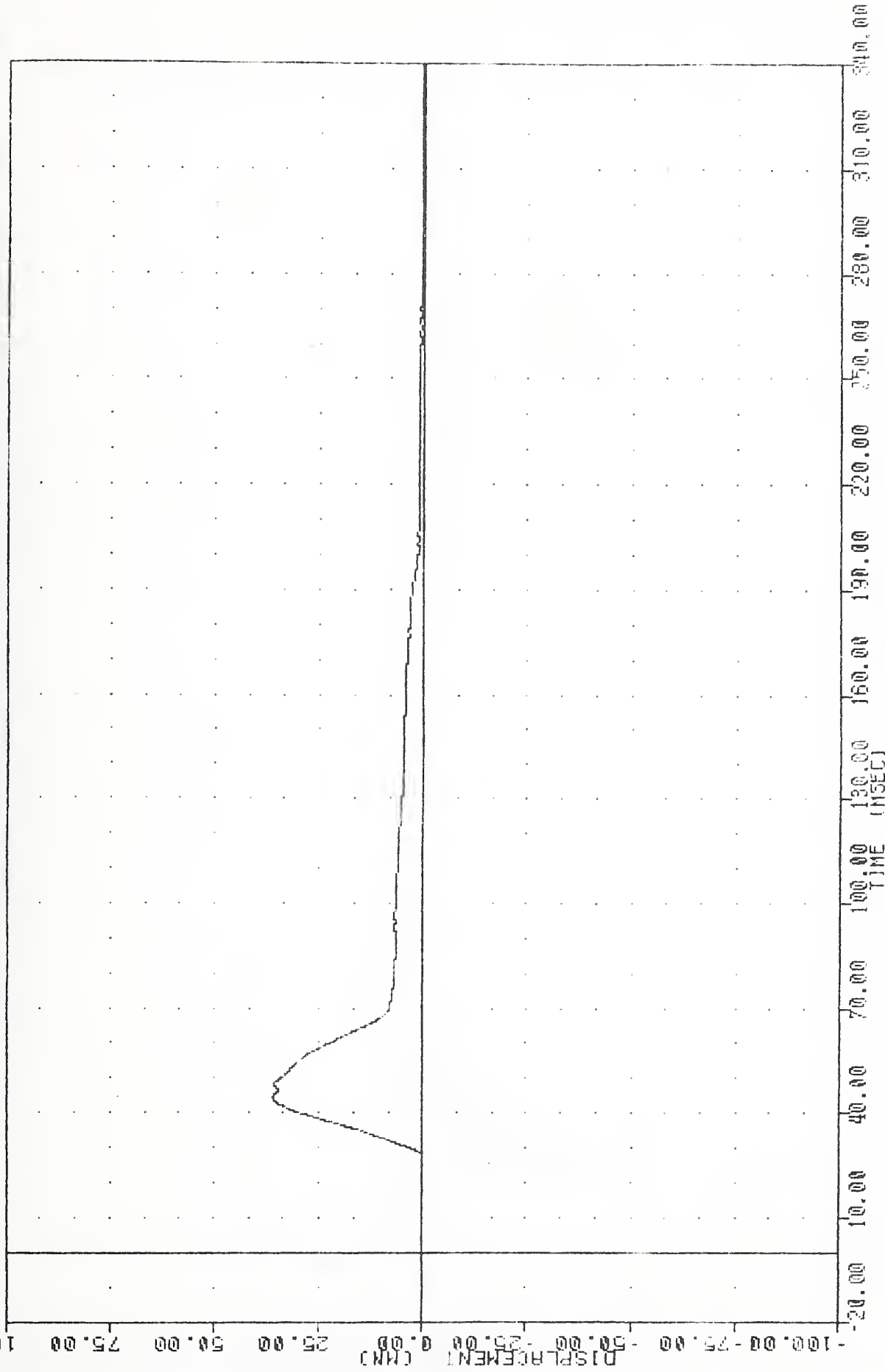
FILTER = BLFF 3000/ 949/ -40  
 MIN, MAX VALUES = 0.00e -20.00, 24.51 e 71.38



MOVING DEFORMABLE BARRIER INTO FURD TAURUS  
 LEFT REAR PASSENGER LEFT UPPER ABDOMEN RIB Y AXIS VELOCITY

NRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LWAYD4

FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -0.09e 24.13 , 35.94 e 44.50

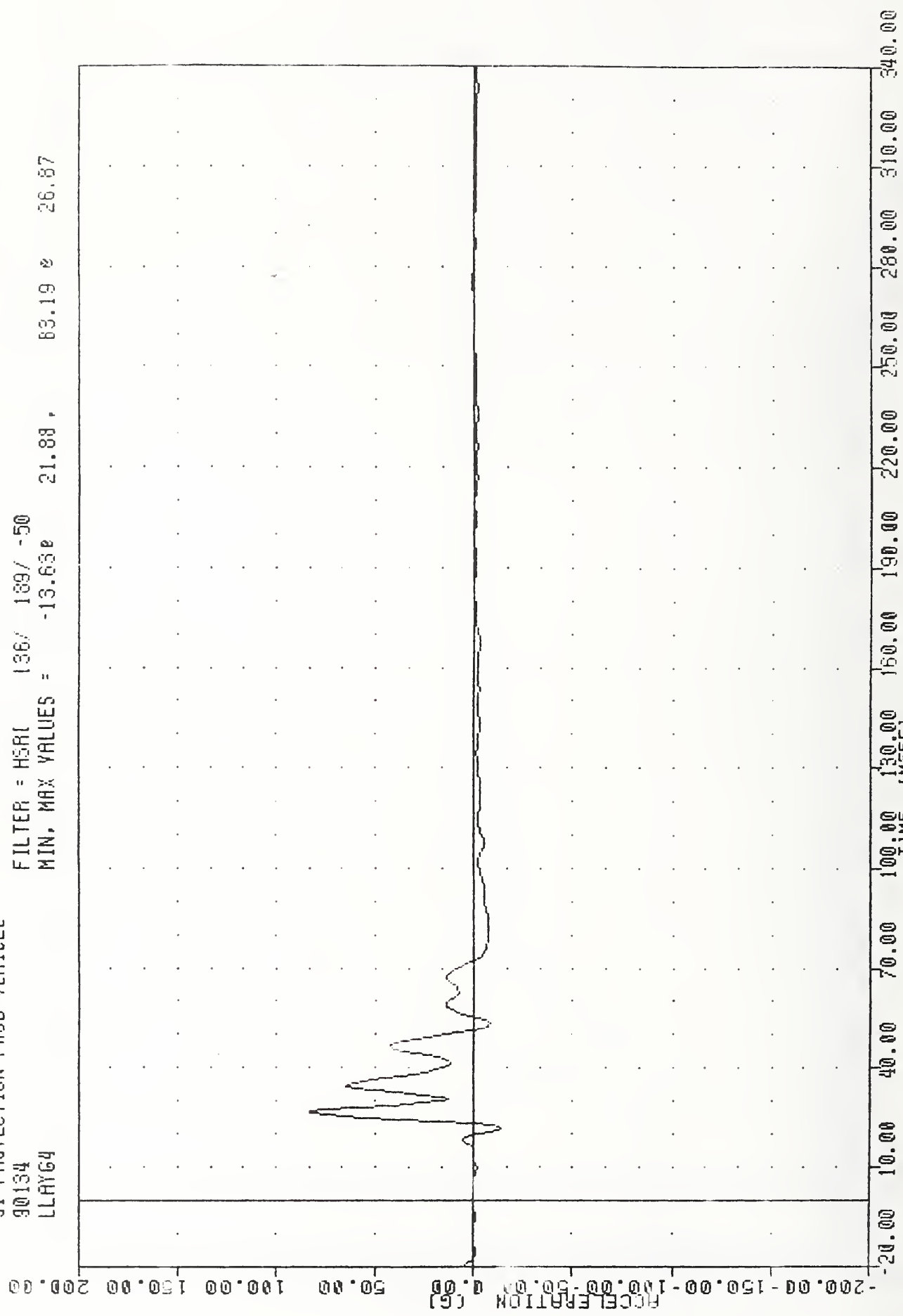


MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LEFT UPPER ARMOR AIR DISPLACEMENT

VRTC  
SI PROTECTION PADD VEHICLE  
90134  
LLAY64

FILTER = HSR  
MIN. MAX VALUES = 136/ 139/ -50  
-13.63e

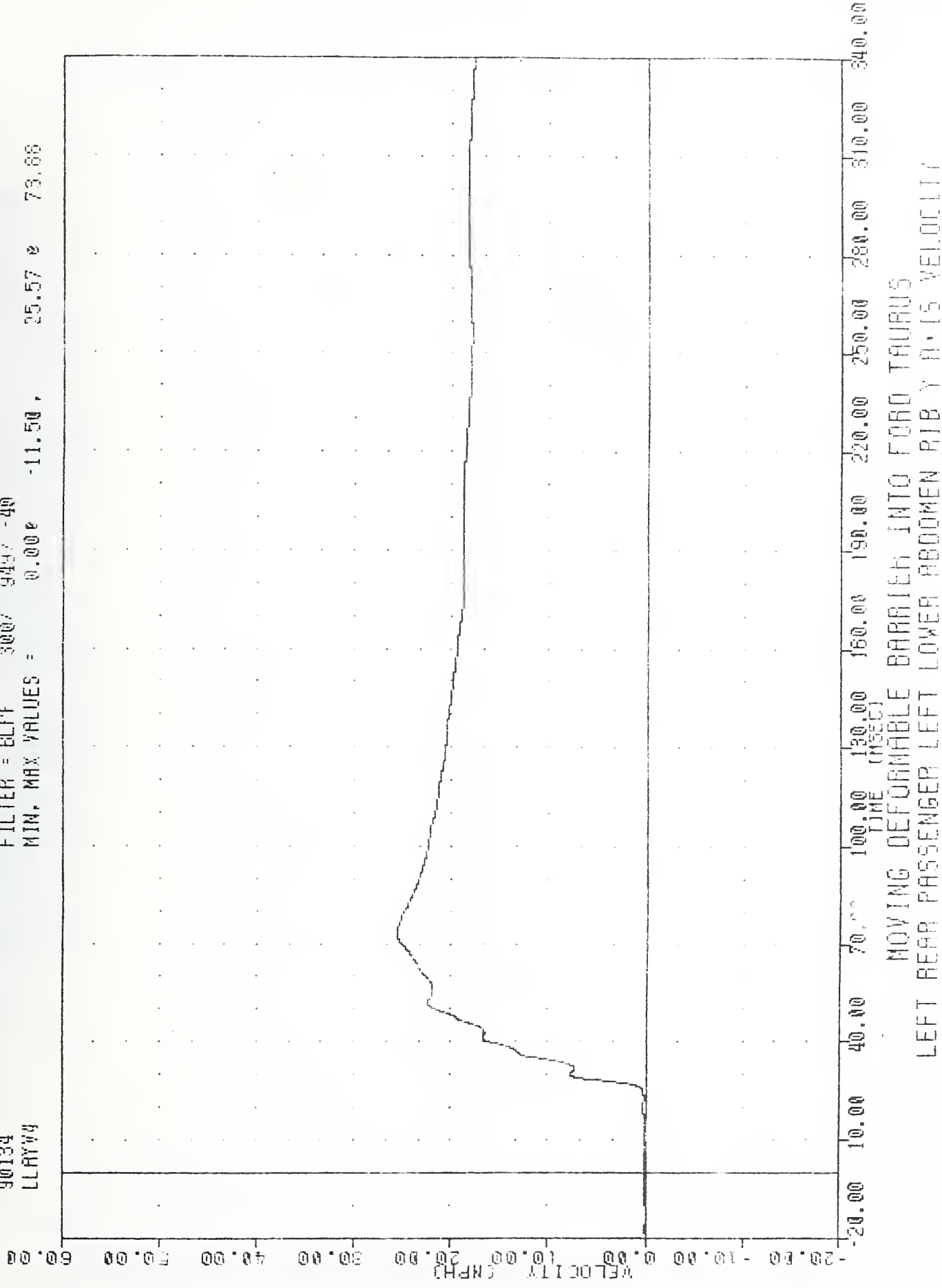
21.88 , 83.19 e 26.87



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
LEFT REAR PASSENGER LEFT LOWER ARMOR RIG Y AXIS ACCELERATION

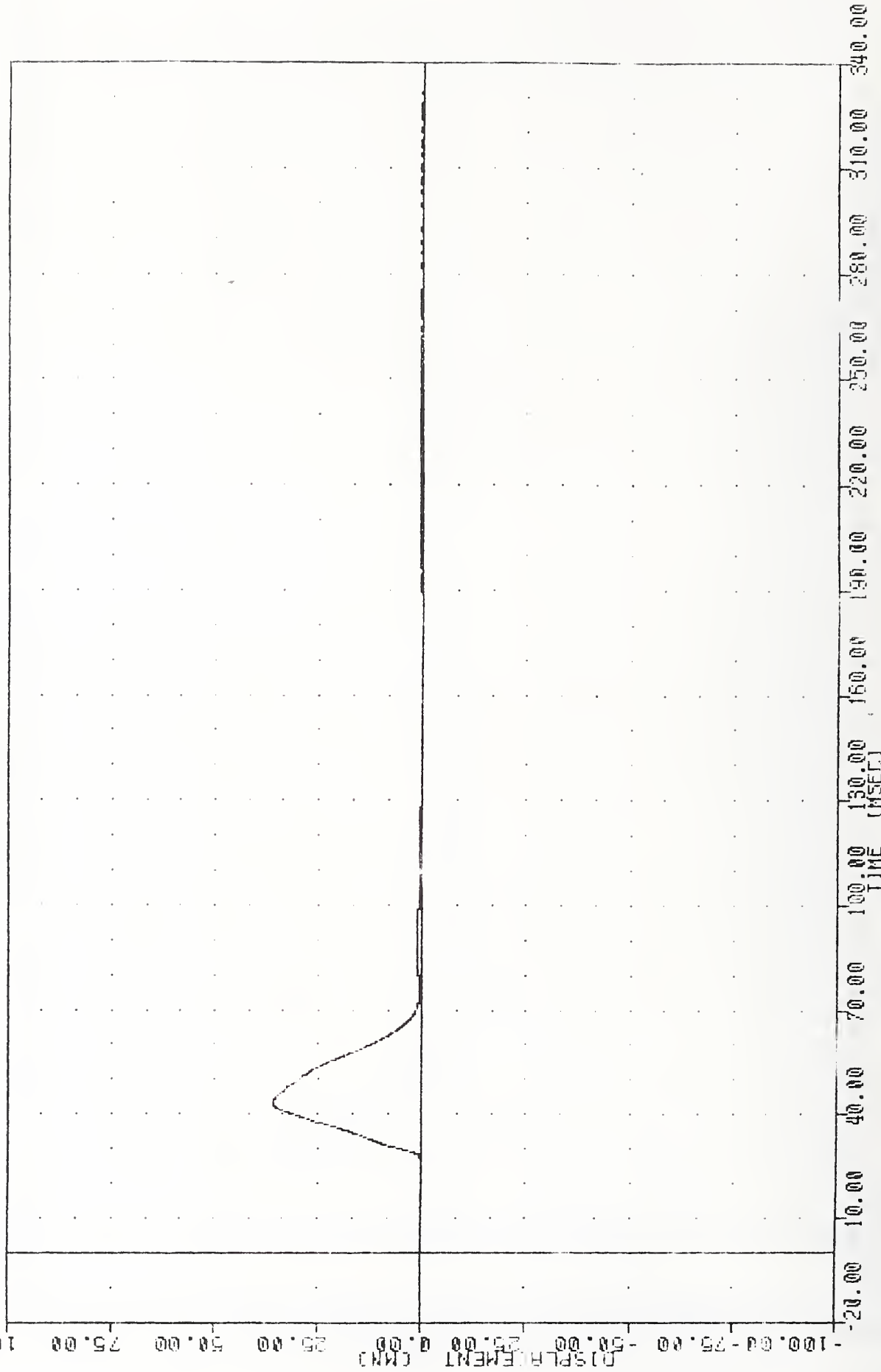
VRTC , 960514  
SI PROTECTION PROO VEHICLE  
90134  
LLAYV4

FILTER = BLFF 3007 9497 -40  
MIN. MAX VALUES = 0.000 -11.50 , 25.57 0 73.66



VNUC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 LLAYD4

FILTER = BLFF 300/ 949/ -40  
 MIN. MAX VALUES = -0.12P 160.50 , 45.10

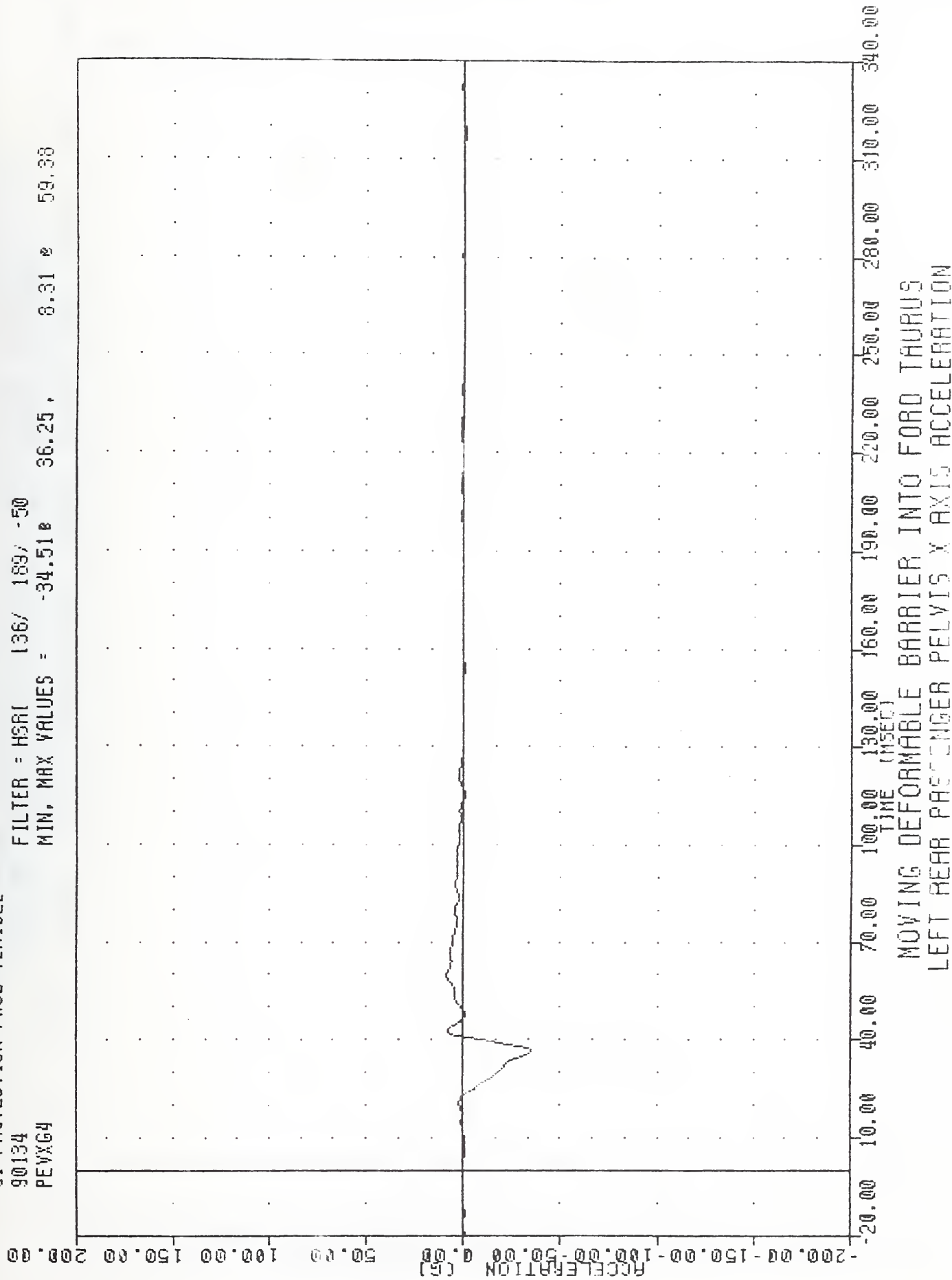


MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER LEFT LOWER ABDOMEN RIB DISPLACEMENT

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
PEVXG4

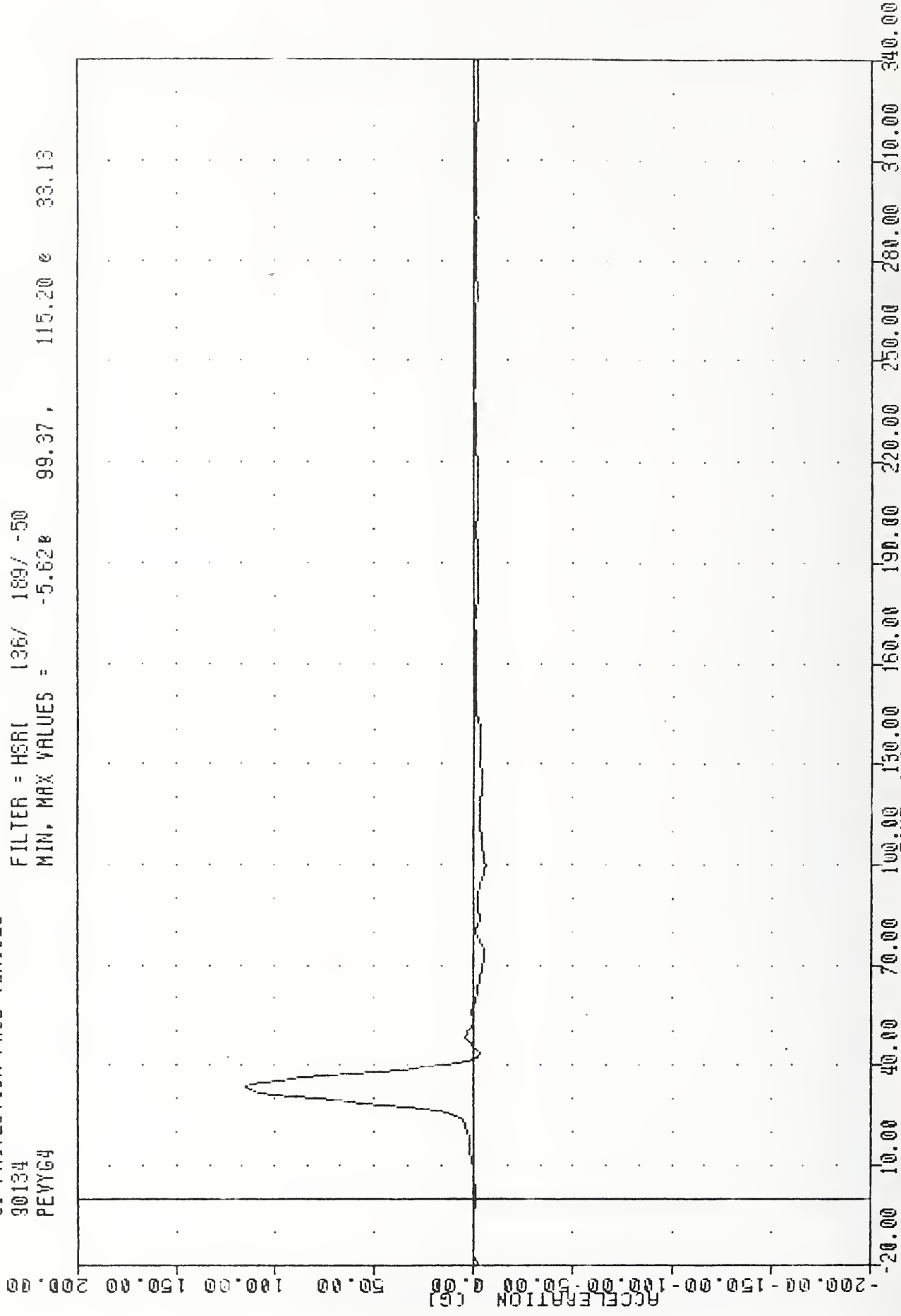
FILTER = HSRI 136/ 189/ -50  
MIN. MAX VALUES = -34.51 36.25 ,

8.31 59.38



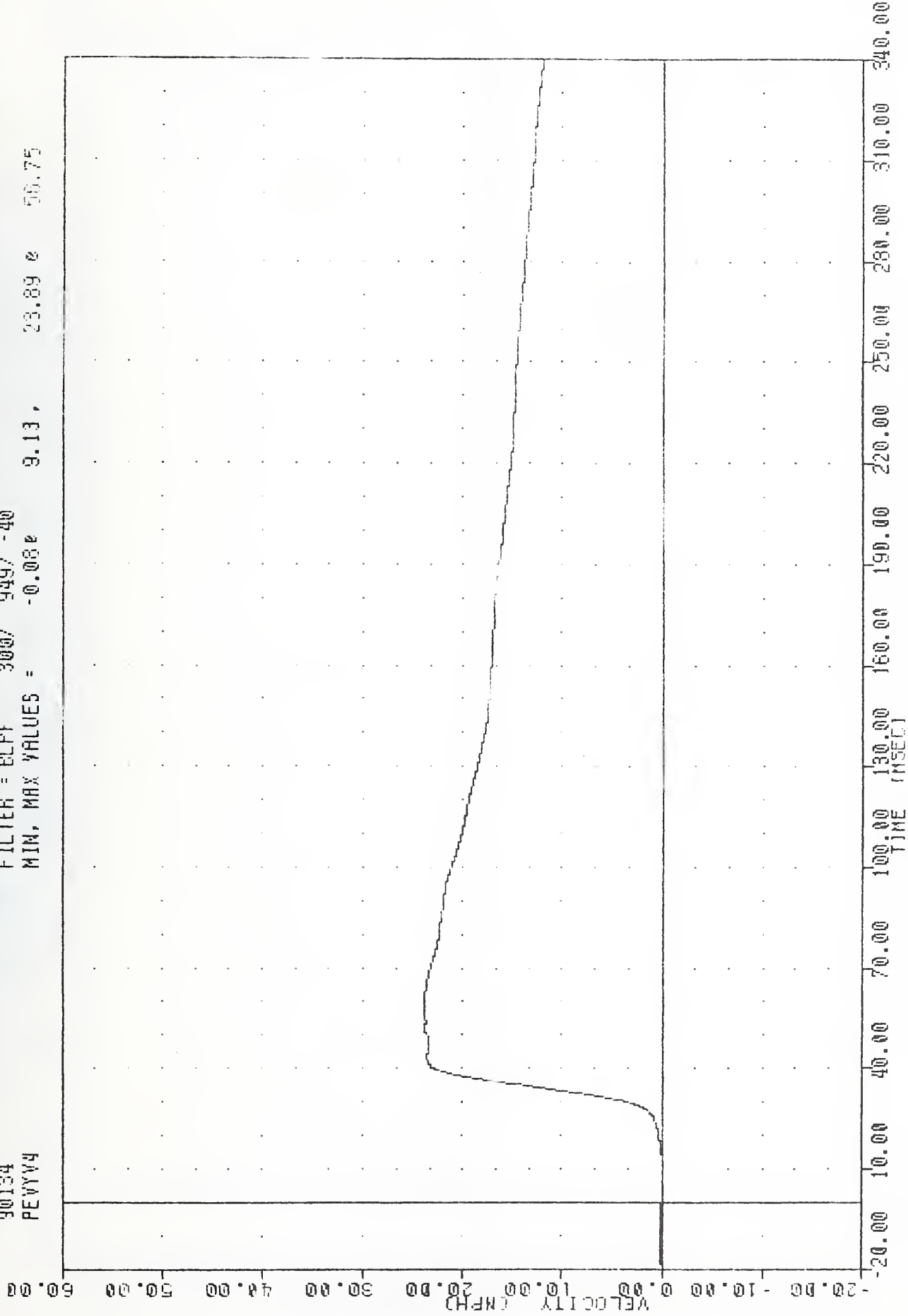
VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
PEVYG4

FILTER = HSRI 136/ 189/ -50  
MIN. MAX VALUES = -5.62% 99.37 , 115.20 e 33.13



VRTC , 900514  
 SI PROTECTION FROM VEHICLE  
 90134  
 PEVYV4

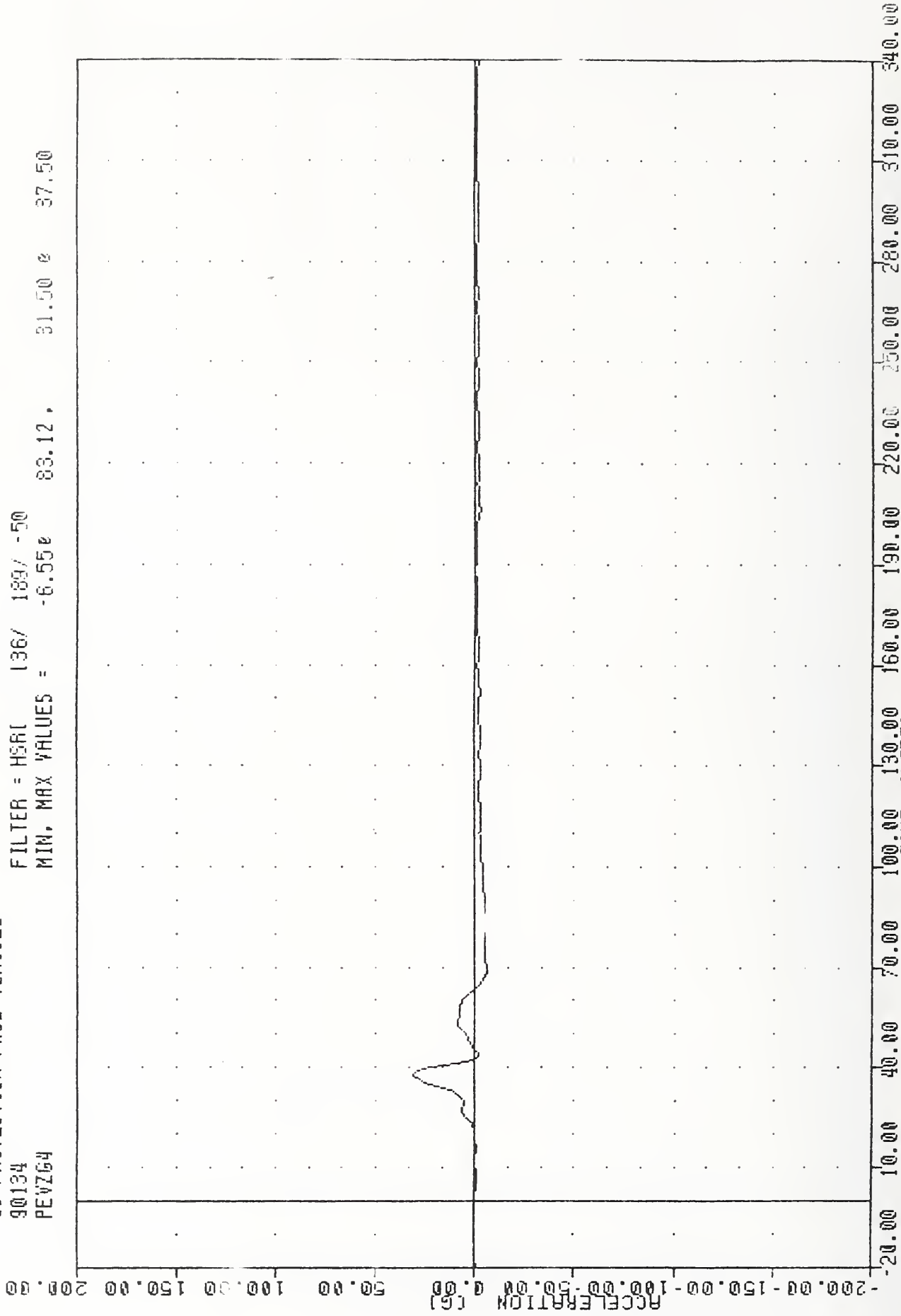
FILTER = ELFF 300/ 949/ -40  
 MIN, MAX VALUES = -0.080 9.13, 23.89 0 55.75



MOVING DEFORMABLE BARRIER INTO FORD TAHOES  
 LEFT REAR PASSENGER PELVIS Y AXIS VELOCITY

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 PEVZ64

FILTER = HSR1 136/ 189/ -50  
 MIN. MAX VALUES = -6.55e 83.12 , 31.50 e 37.50

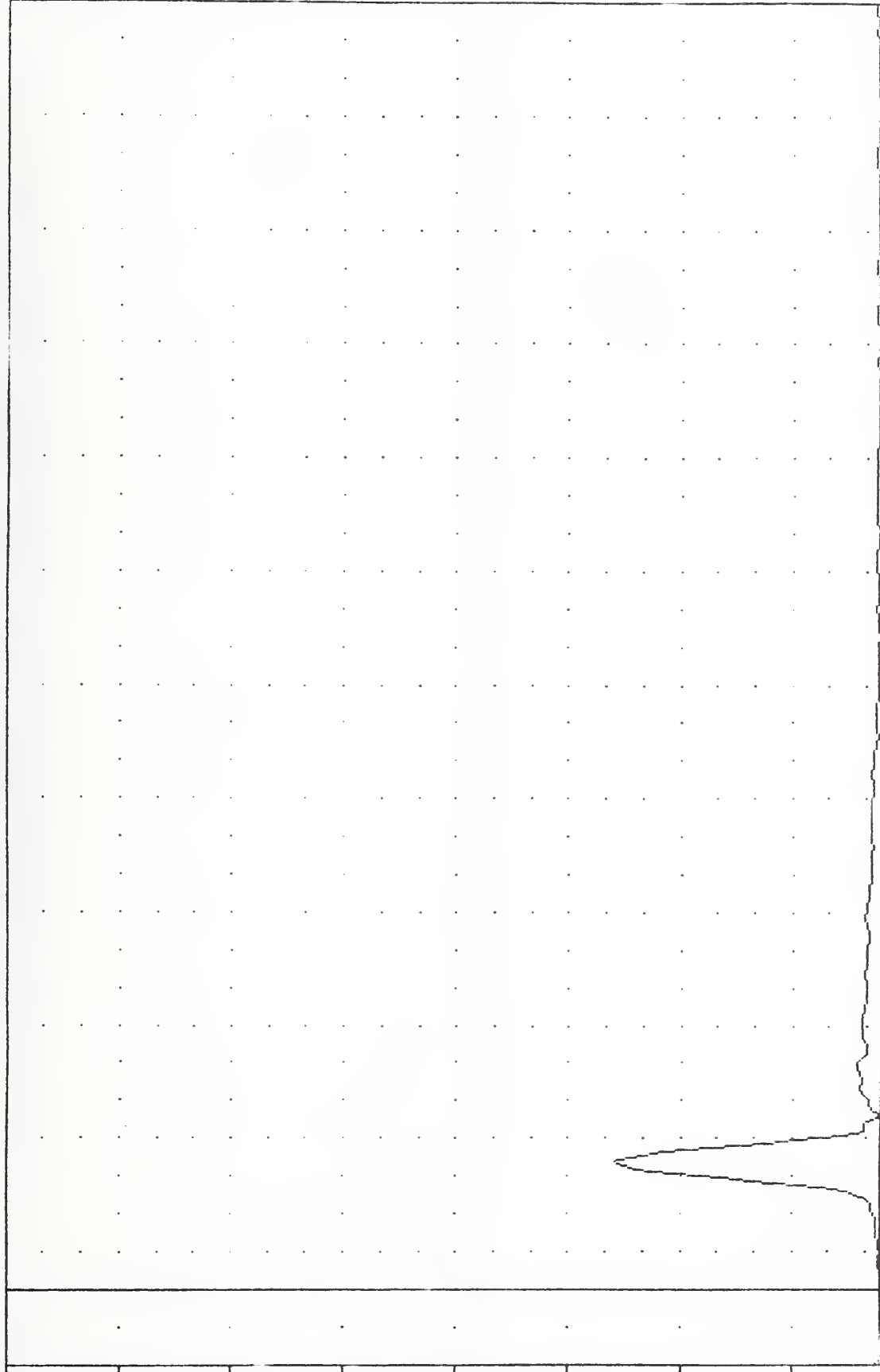


MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER PELVTS 7 AXIS ACCELERATION

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 PEVR64

FILTER = HSR( 136/ 189/ -50  
 MIN, MAX VALUES = 0.11e -5.62, 118.71 33.75

ACCELERATION (G)

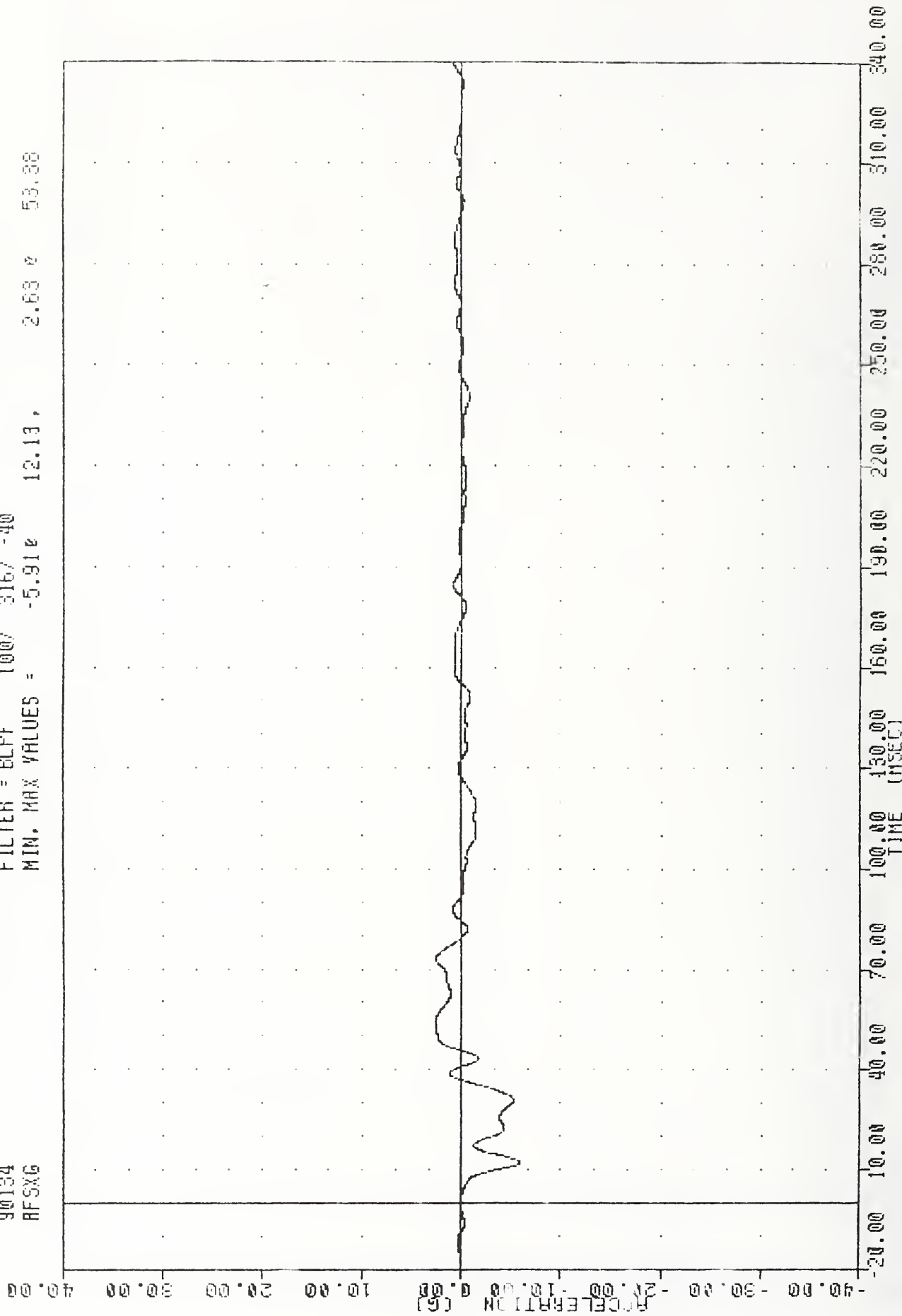


TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 LEFT REAR PASSENGER PELVIS RESULTANT ACCELERATION

VRIC, 900514  
SI PROTECTION PROD VEHICLE  
90134  
RFSXG

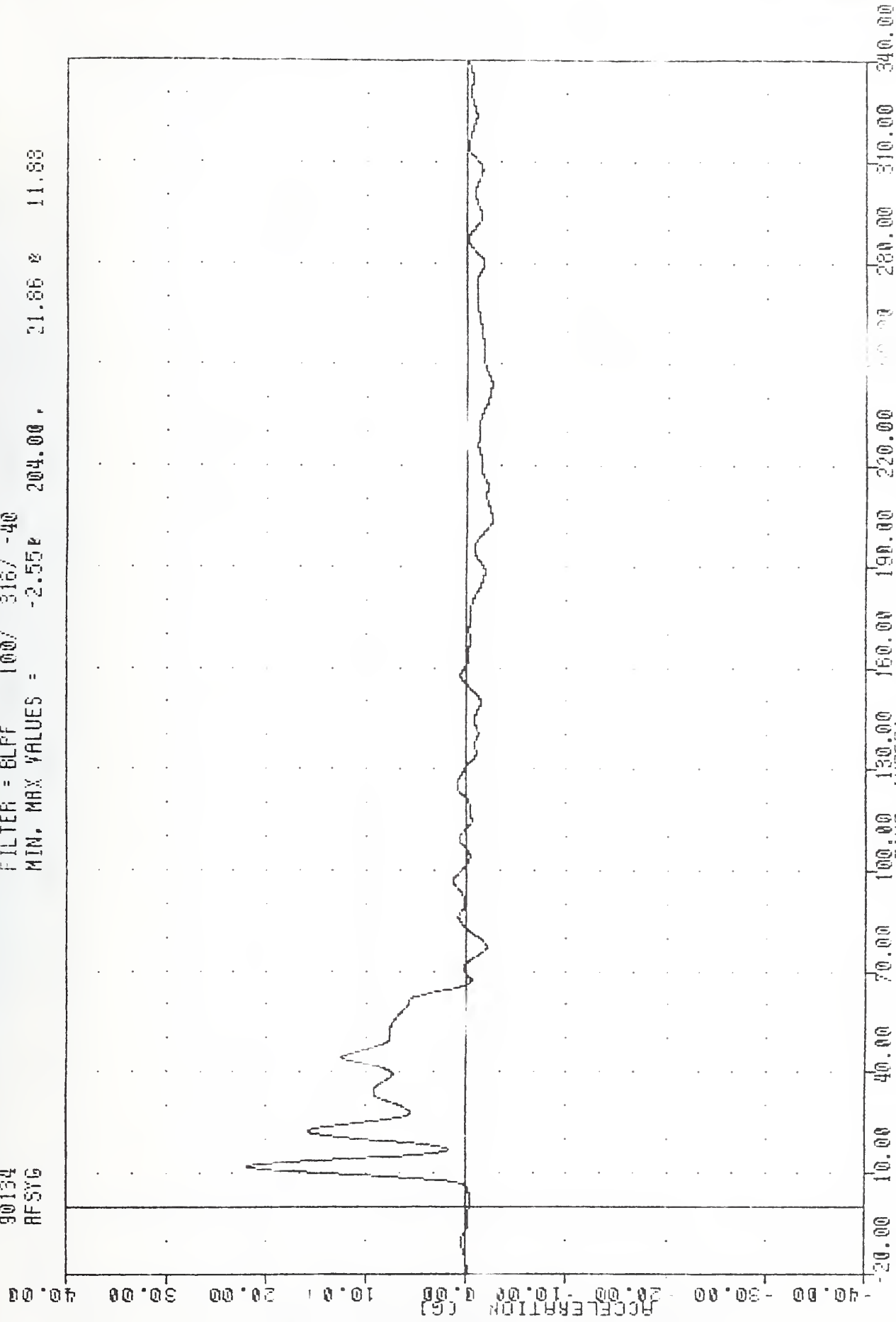
FILTER = BLPF 100/ 316/ -40  
MIN. MAX VALUES = -5.91e 12.13, 2.63 e 53.38



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE RIGHT FRONT STILL X AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
RFSYG

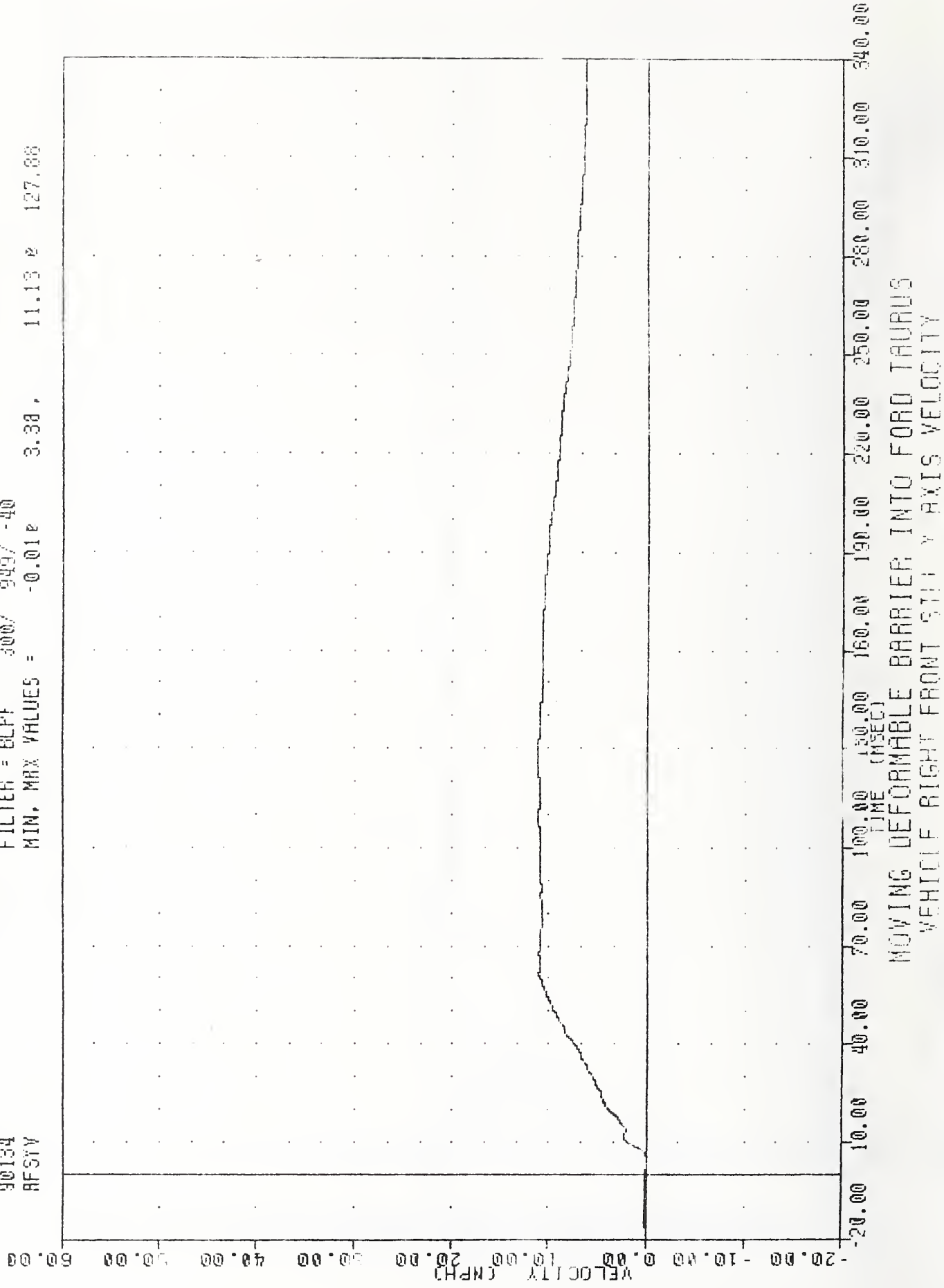
FILTER = BLFF 100/ 316/ -40  
MIN. MAX VALUES = -2.55 204.00 21.86 11.80



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE RIGHT FRONT GULLY AXIS ACCELERATION

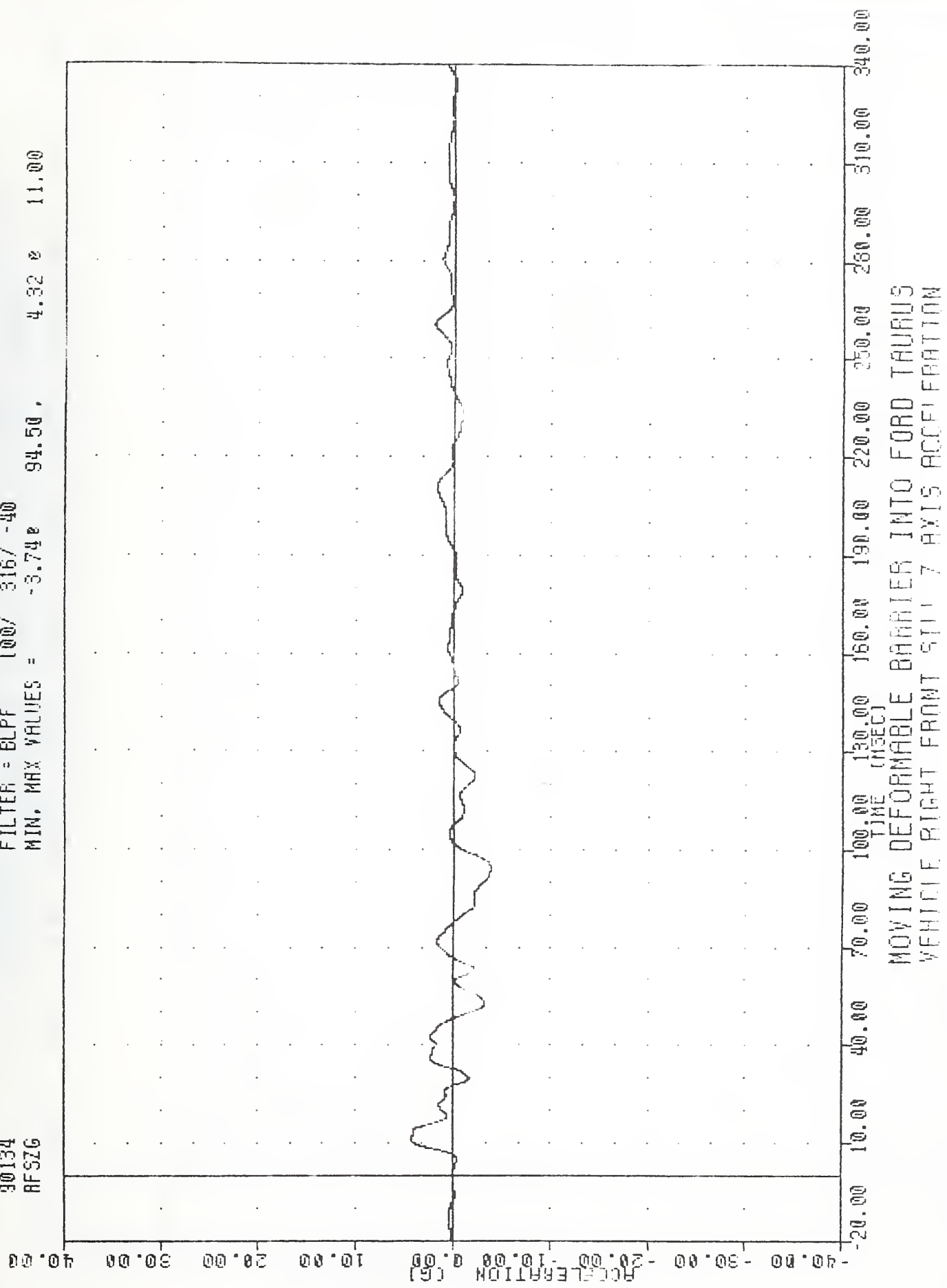
VRTC , 900514  
S1 PROTECTION PAD VEHICLE  
90134  
AFSYV

FILTER = BLPF 300/ 999/ -40  
MIN, MAX VALUES = -0.01e 3.38, 11.13 e 127.88



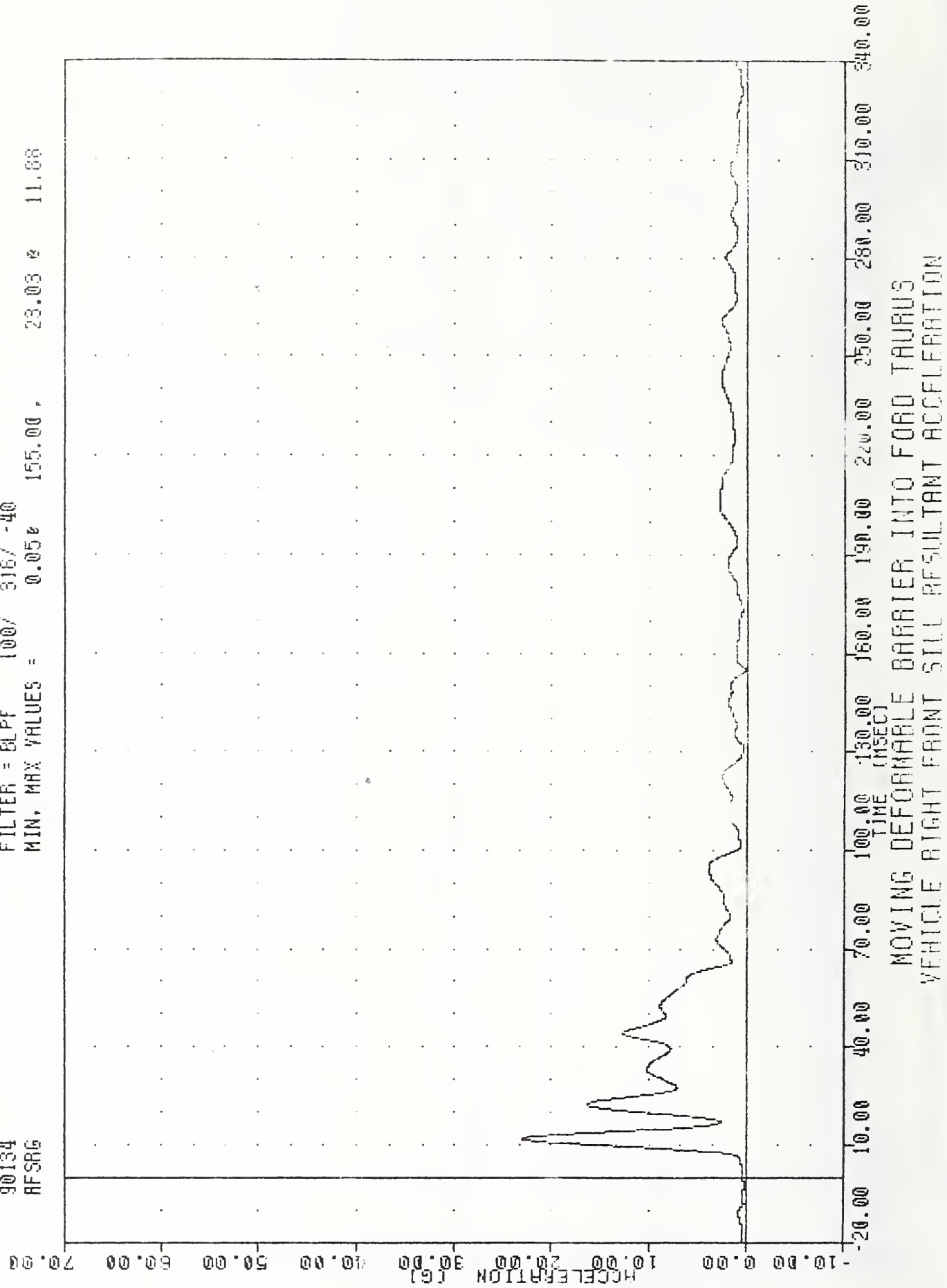
VRIC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
AFS2G

FILTER = BLPF 100/ 316/ -40  
MIN. MAX VALUES = -3.74e 94.50 , 4.32 e 11.00



VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 RFSRG

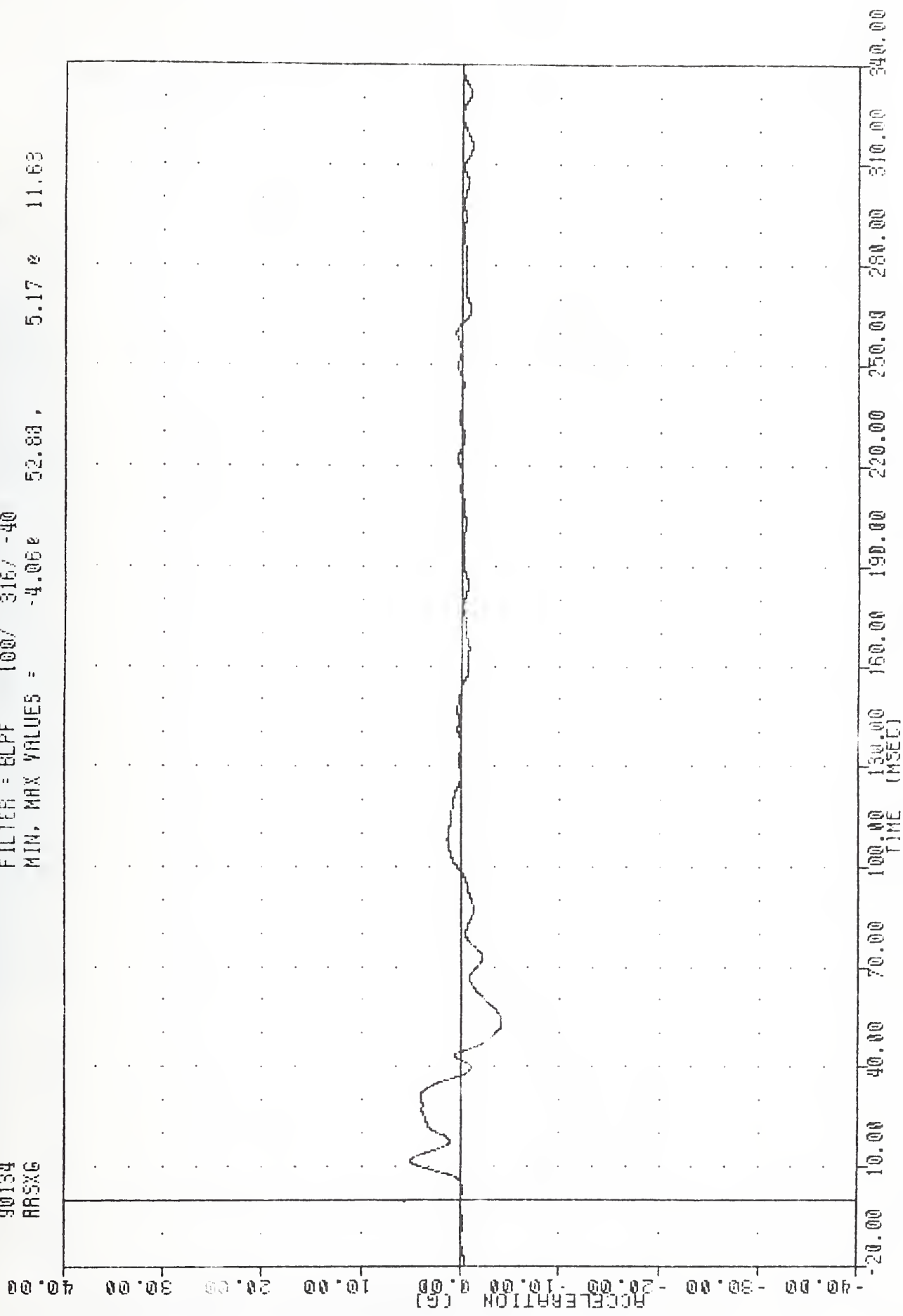
FILTER = 8L PF 100/ 316/ -40  
 MIN. MAX VALUES = 0.05e 155.00 , 23.03 e 11.88



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 VEHICLE RIGHT FRONT SILL RESULTANT ACCELERATION

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 ARSNG

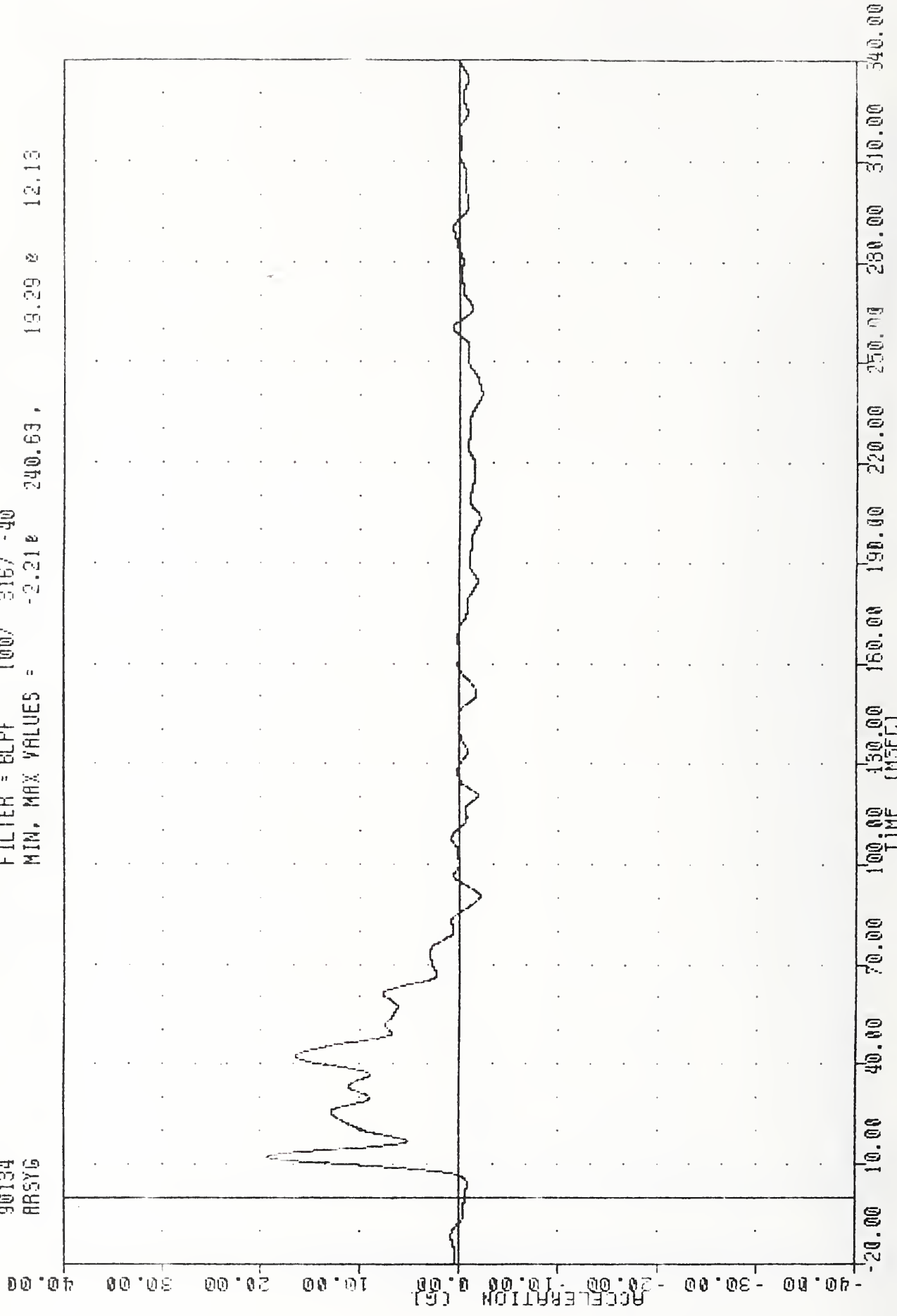
FILTER = BLPF 100/ 316/ -40  
 MIN, MAX VALUES = -4.06e 52.83, 5.17 e 11.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 VEHICLE RIGHT REAR STIFF AXIS ACCELERATION

VRIC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
AR5Y6

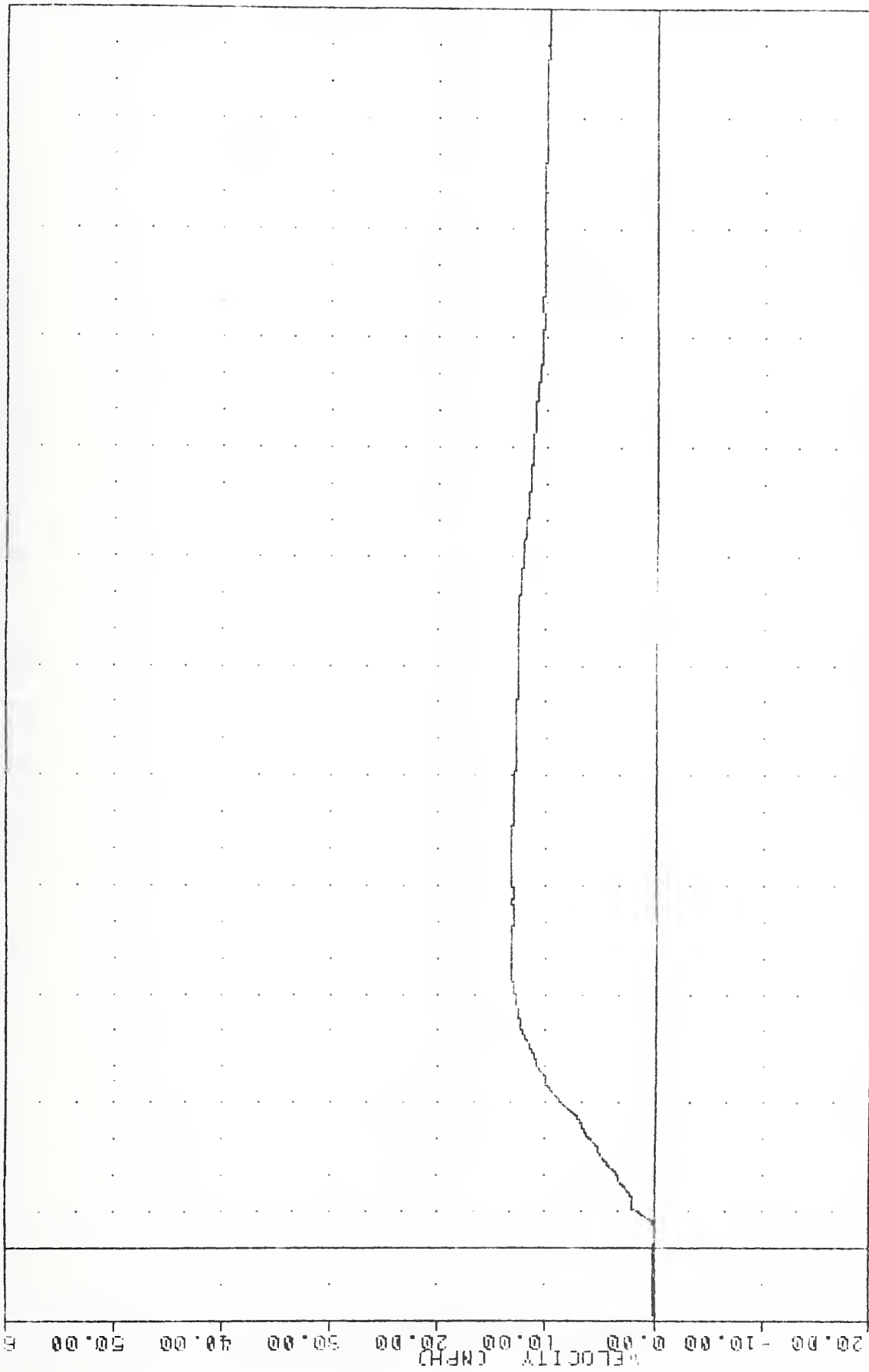
FILTER = BLPF 100/ 316/ -40  
MIN. MAX VALUES = -2.21e 240.63 , 19.29 e 12.13



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE RIGHT REAR STILL Y AXIS ACCELERATION

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 RRSYV

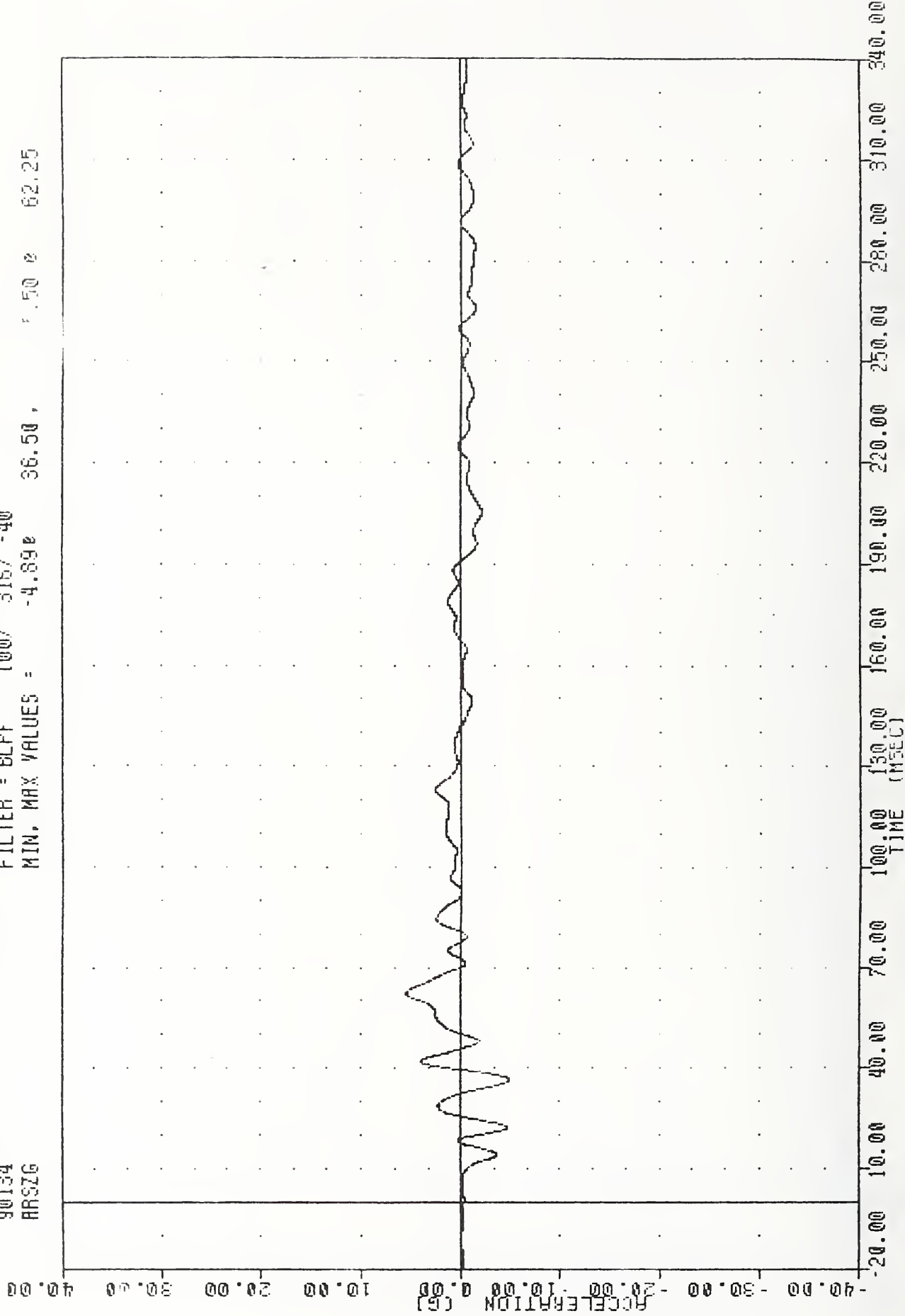
FILTER = ELPF 300/ 949/ -40  
 MIN. MAX VALUES = -0.05e 4.13, 13.36 e 83.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 VEHICLE RIGHT REAR SILL Y AXIS VELOCITY

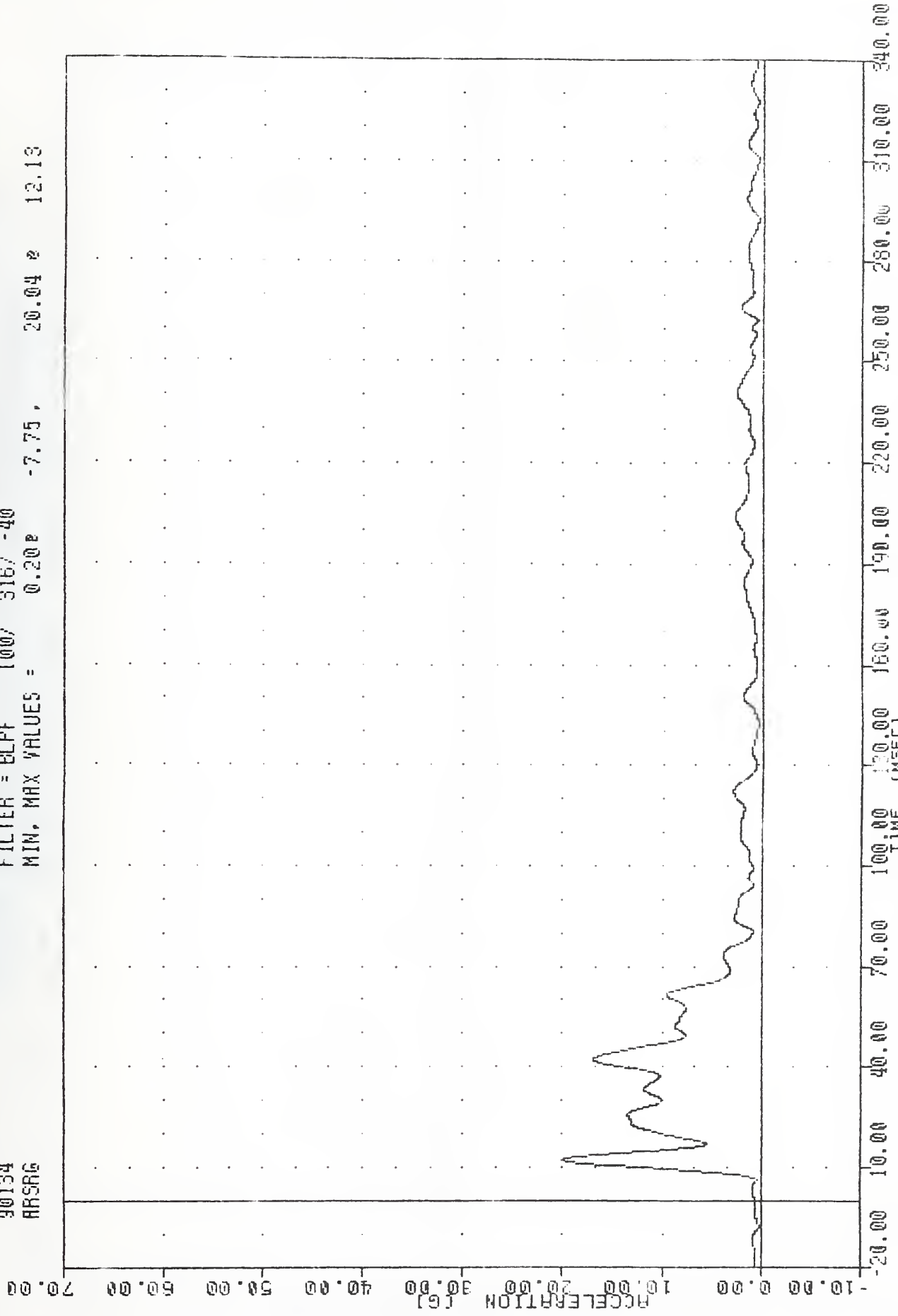
VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
RRSZG

FILTER = BLFF 100/ 316/ -40  
MIN. MAX VALUES = -4.89e 38.50 , 7.50 e 62.25



VRIC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
ARSRG

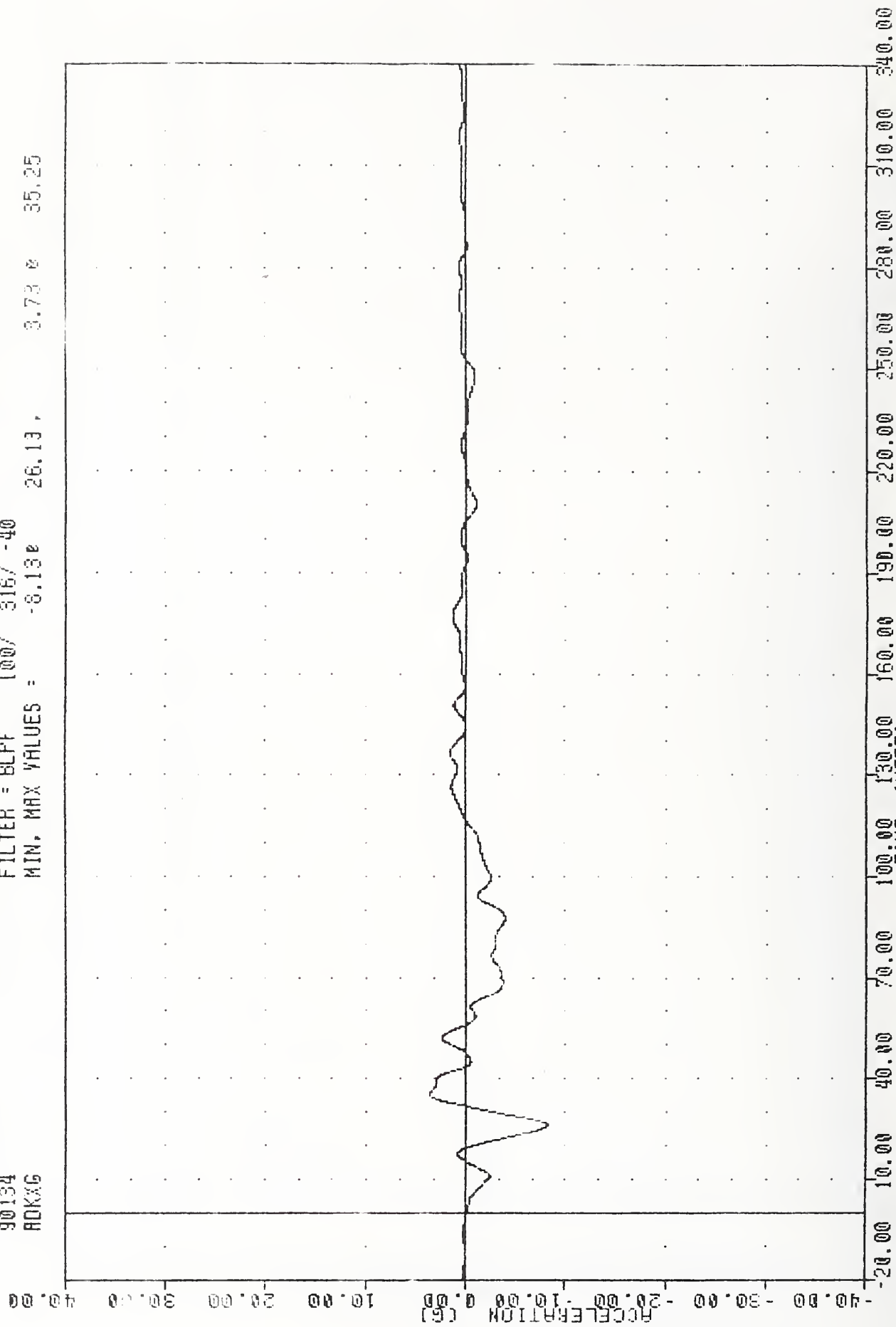
FILTER = BLPF 100/ 316/ -40  
MIN. MAX VALUES = 0.20P -7.75, 20.04 e 12.13



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE RIGHT REAR SILL RESULTANT ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
RDKAG

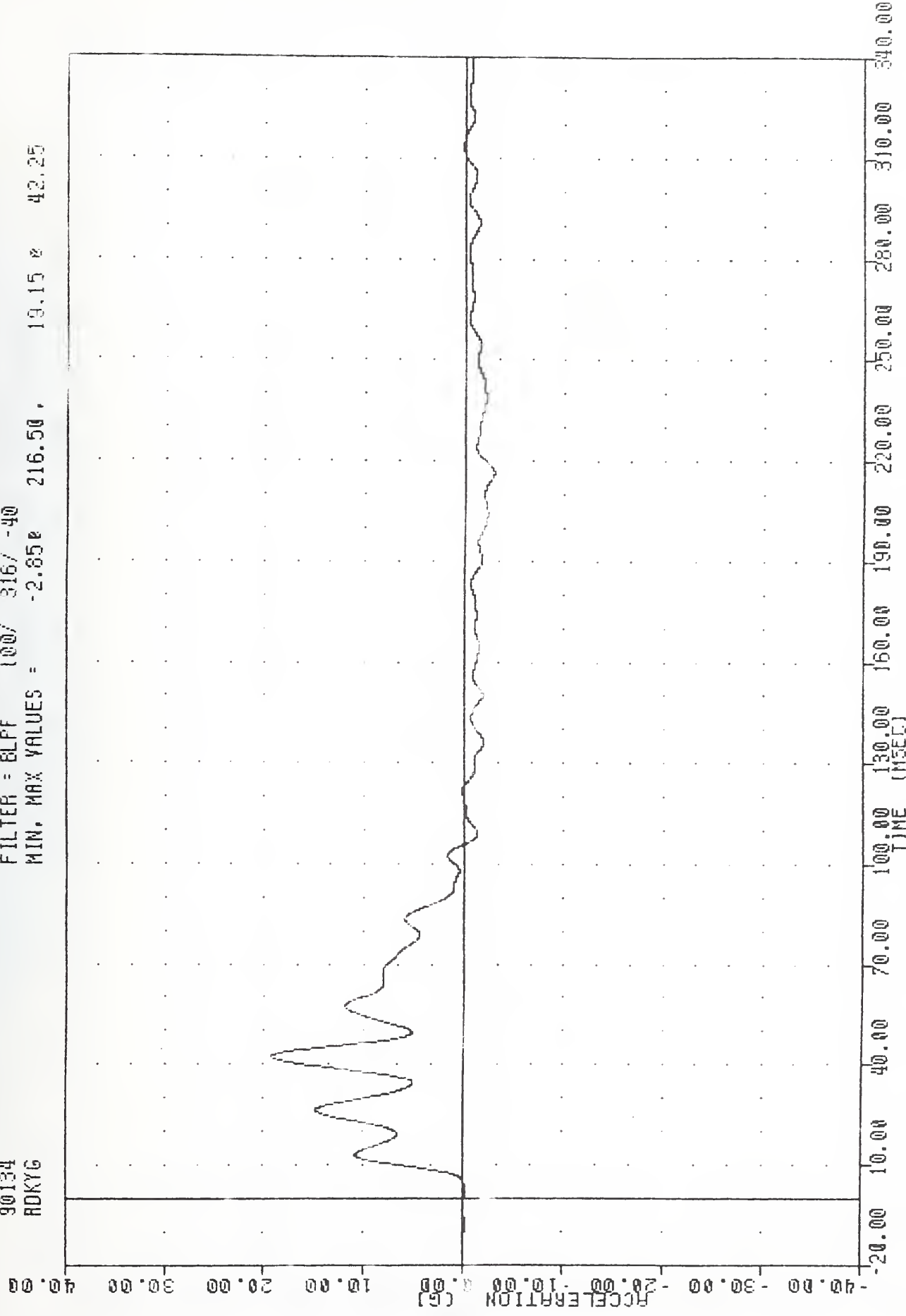
FILTER = BLFF 100/ 316/ -40  
MIN. MAX VALUES = -8.13e 26.13 , 3.73 e 35.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE REAR DECK X AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION PASS VEHICLE  
90134  
ADKYG

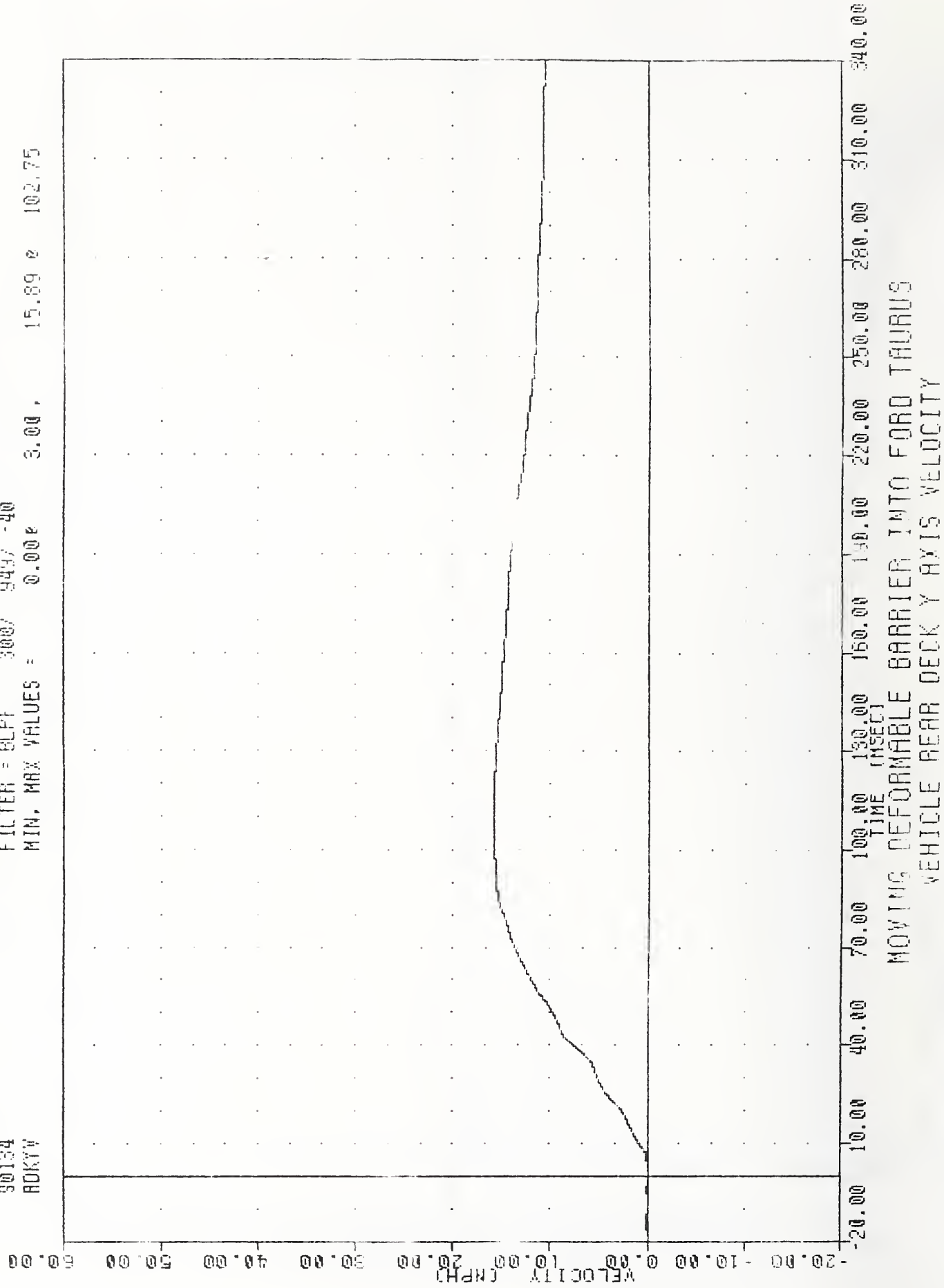
FILTER = ELFF 100/ 316/ -40  
MIN. MAX VALUES = -2.85e 216.50 , 19.15 e 42.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE REAR DECK Y AXIS ACCELERATION

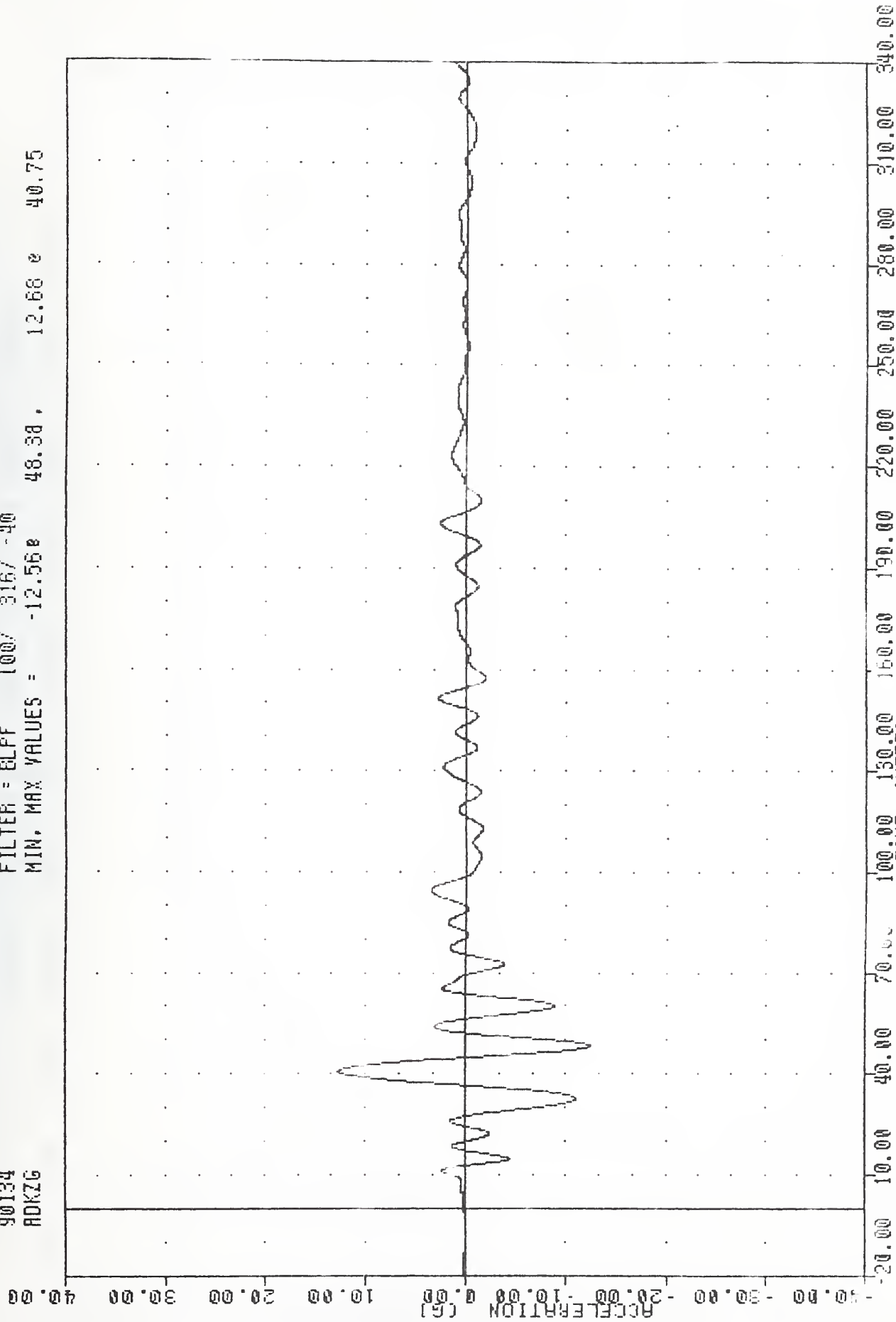
VRTG , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 ROKYV

FILTER = 5LFF 300/ 949/ -40  
 MIN. MAX VALUES = 0.000 3.00 , 15.89 0 102.75



VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
ADKZG

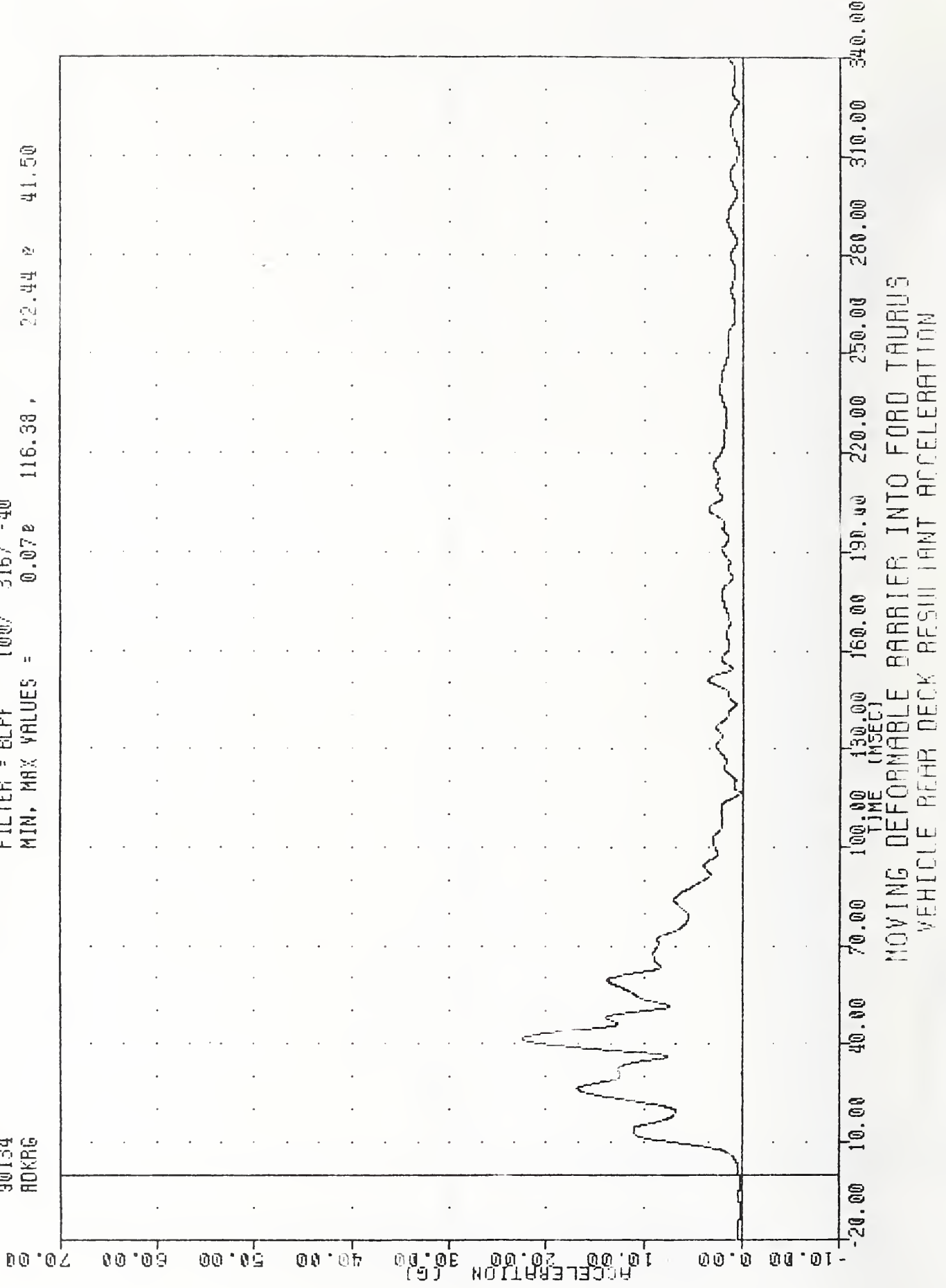
FILTER = ELFF 100/ 316/ -40  
MIN. MAX VALUES = -12.56e 48.38, 12.68 e 40.75



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE REAR DECK Z AXIS ACCELERATION

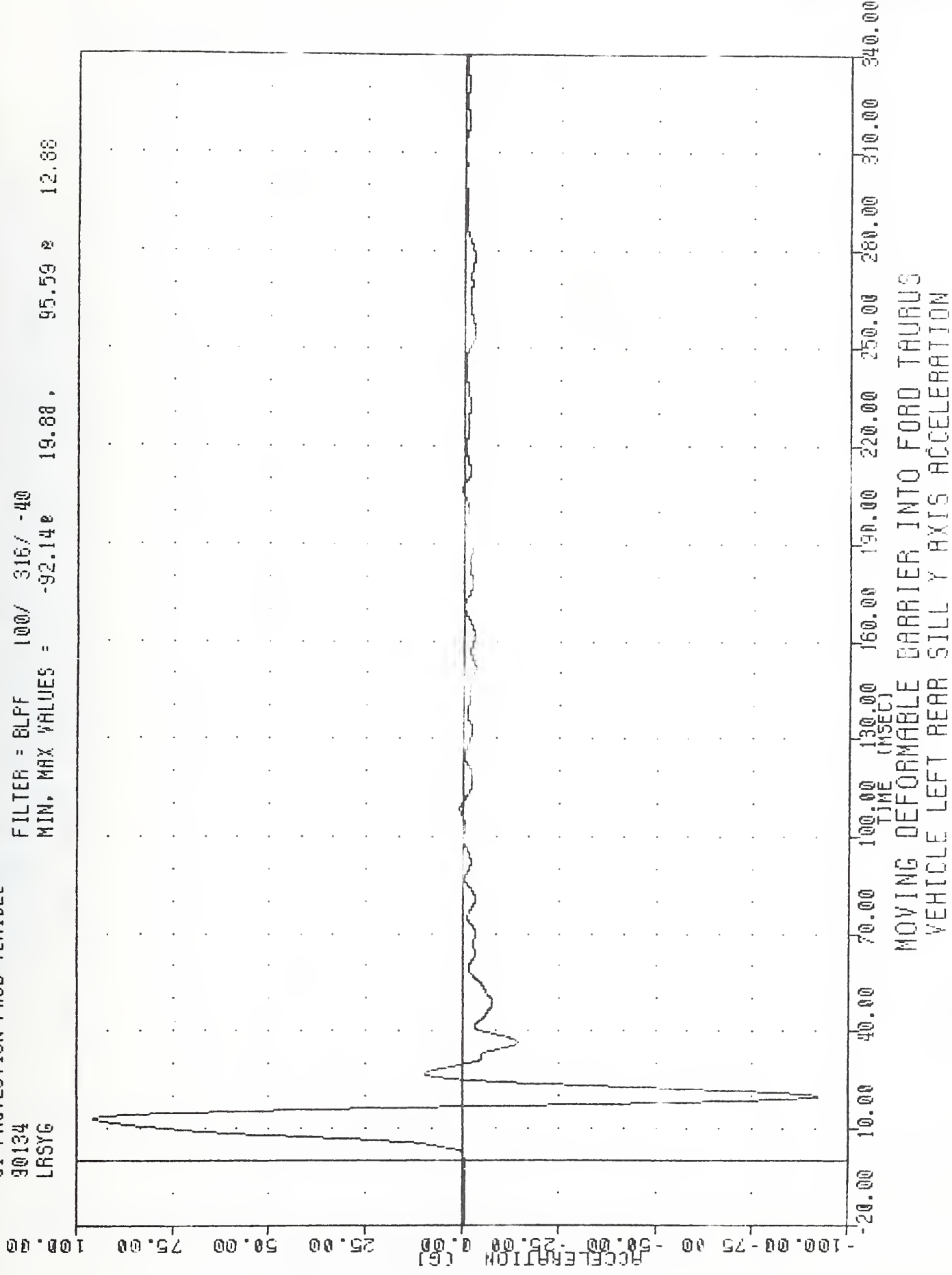
VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 ADKRG

FILTER = 6LPF 100/ 316/ -40  
 MIN, MAX VALUES = 0.07e 116.38 , 22.44 e 41.50



VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LRSYG

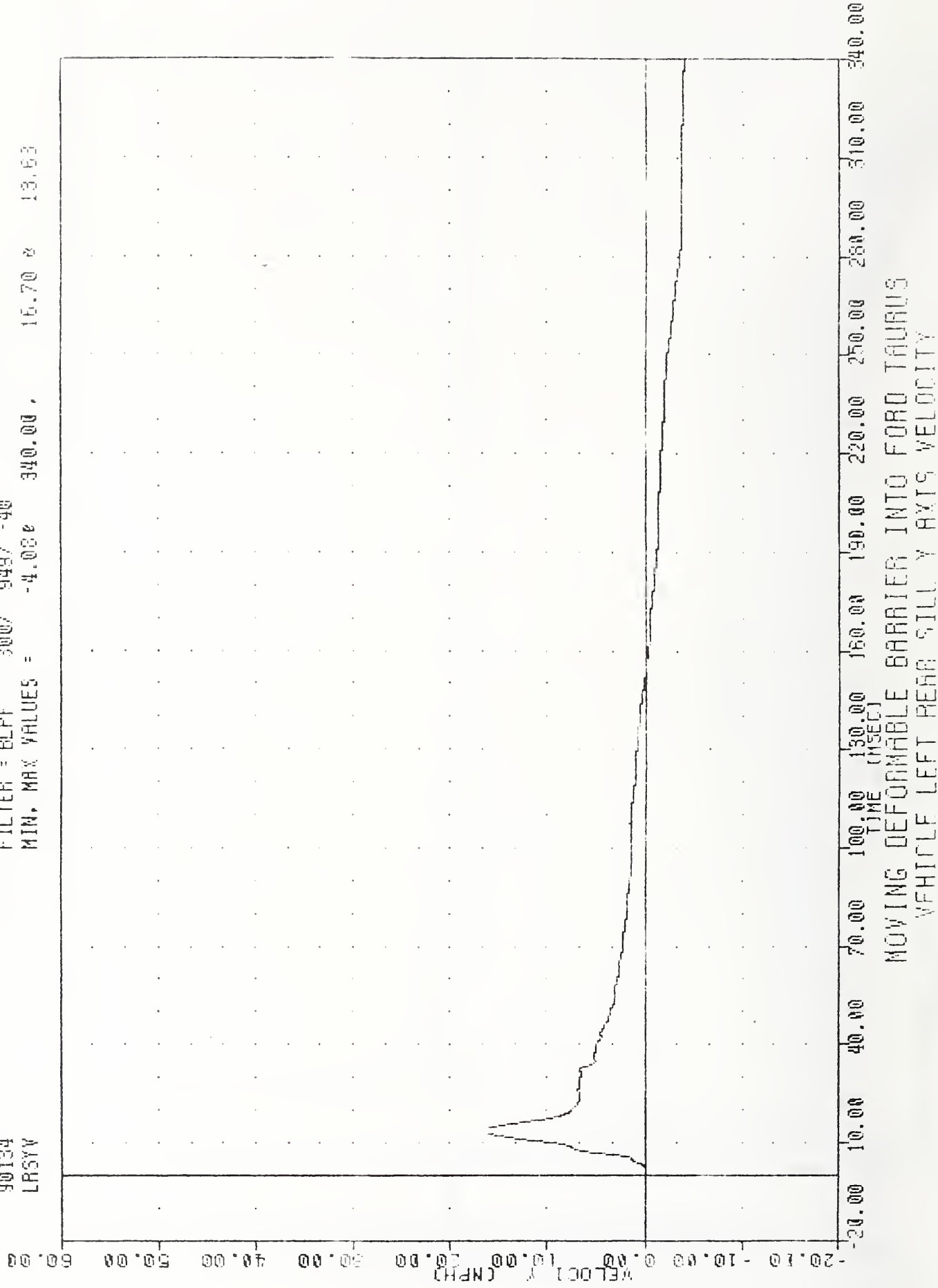
FILTER = BLPF 100/ 316/ -40  
MIN. MAX VALUES = -92.14e 19.88, 95.59 e 12.88



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE LEFT REAR SILL Y AXIS ACCELERATION

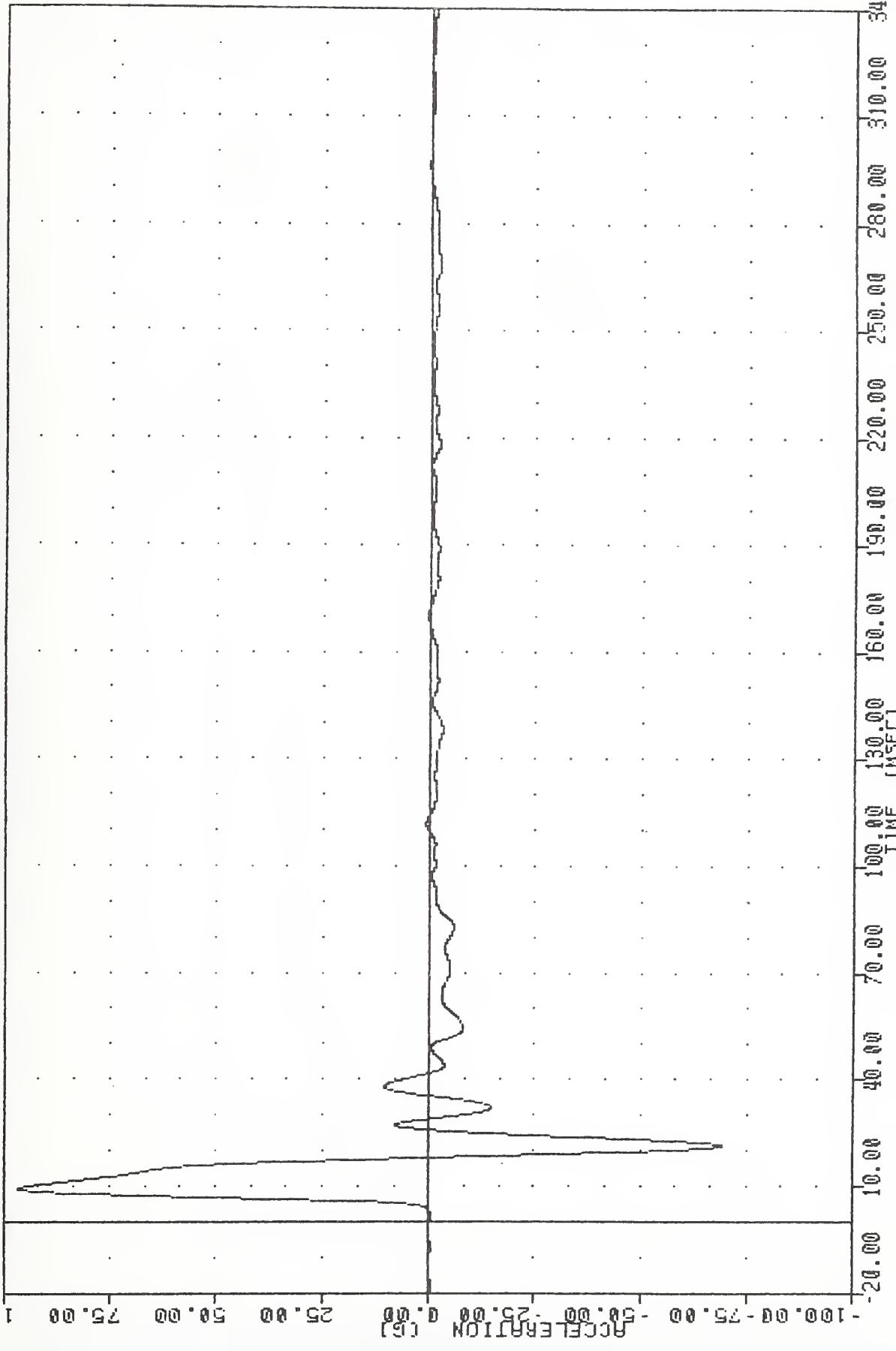
VRTC , 900514  
SI PROTECTION PROO VEHICLE  
90134  
LRSYV

FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -4.03e 340.00 , 15.70 e 13.53



VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LFSYG

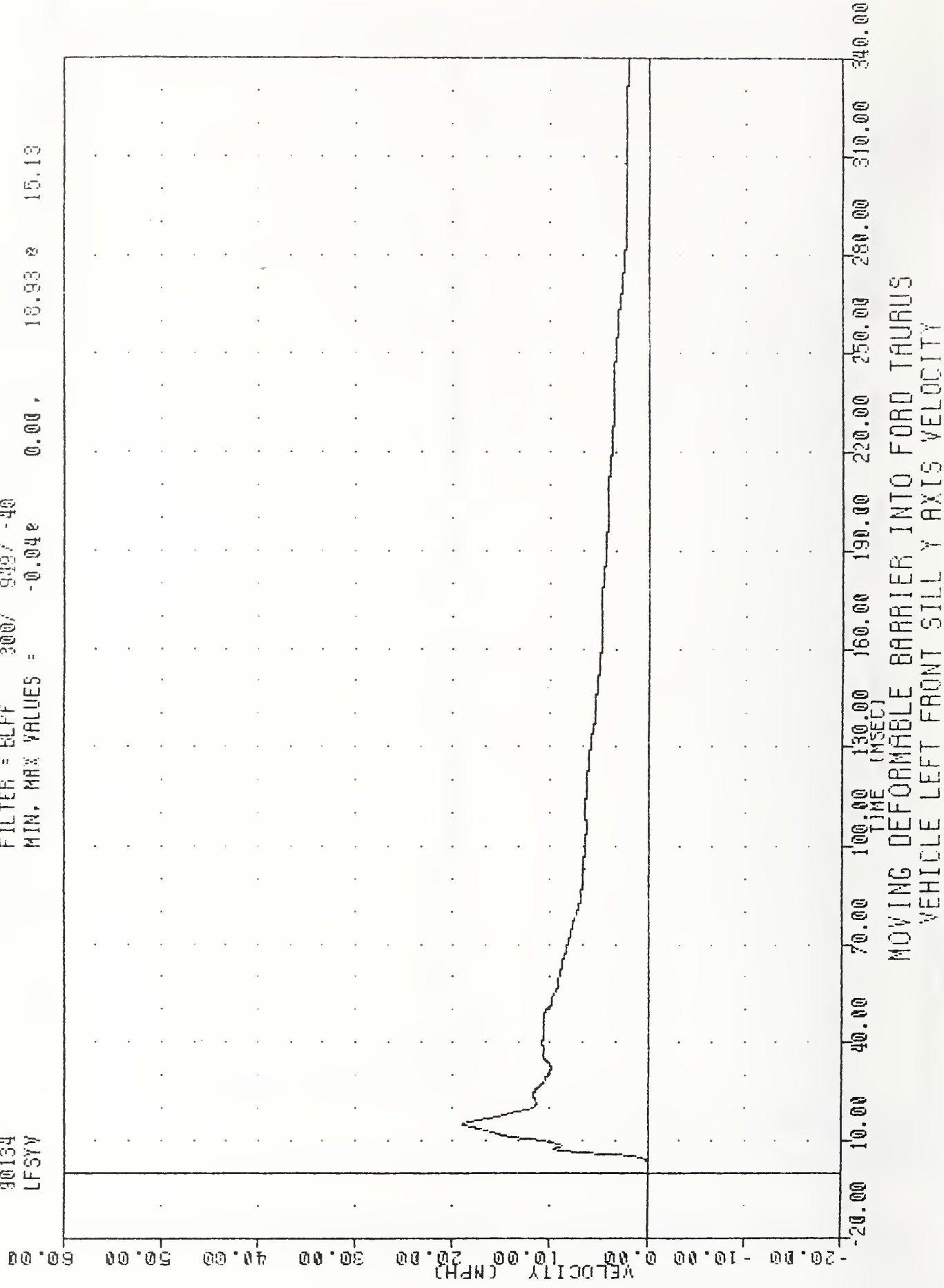
FILTER = 8LFF 100/ 316/ -40  
MIN. MAX VALUES = -69.43e 21.38 , 96.57 e 9.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE LEFT FRONT SILL Y AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION FROM VEHICLE  
90134  
LFSYV

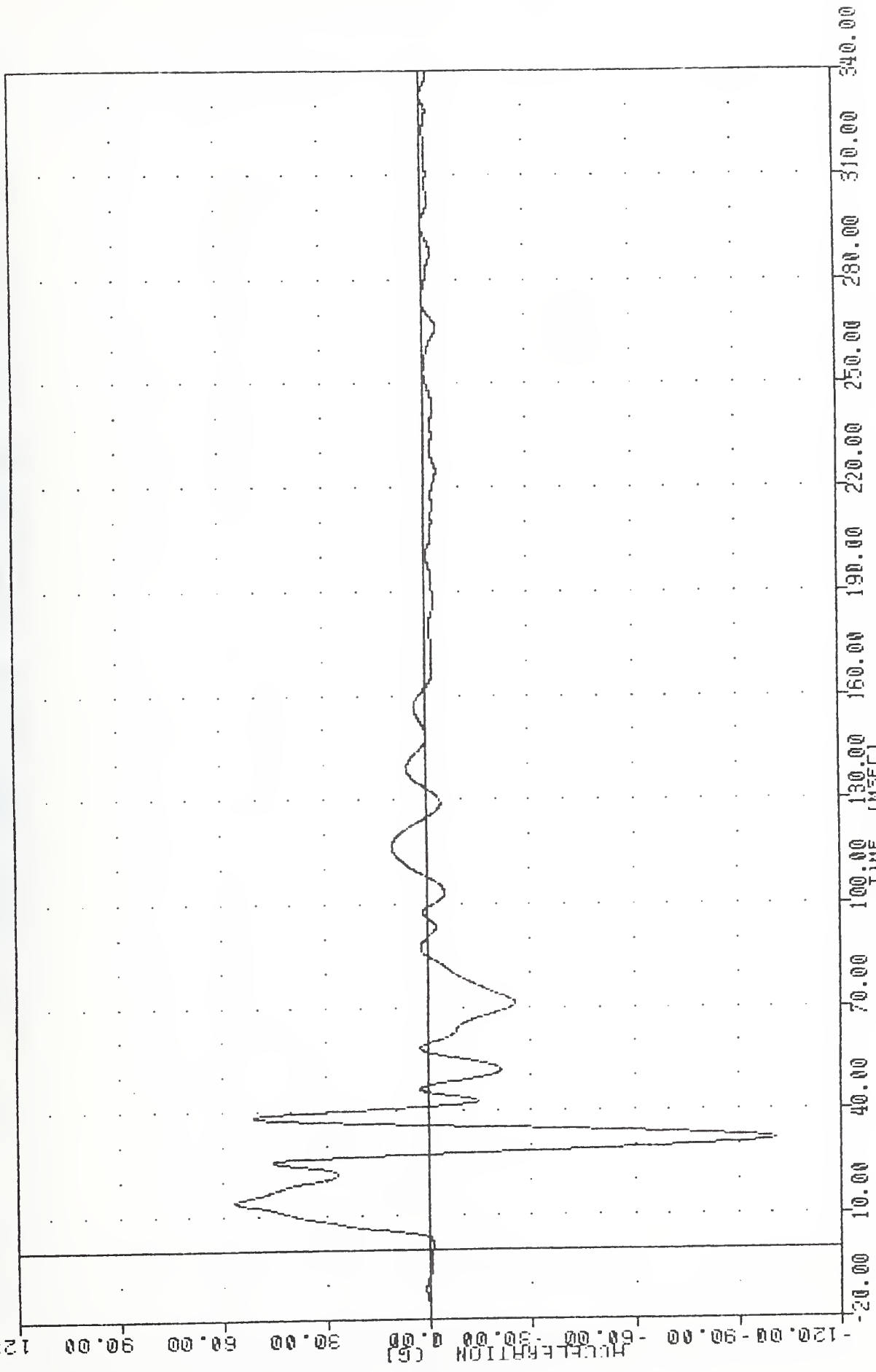
FILTER = BLFF 300/ 949/ -40  
MIN. MAX VALUES = -0.04e 0.00 , 18.93 e 15.13



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE LEFT FRONT SILL Y AXIS VELOCITY

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LFDY61

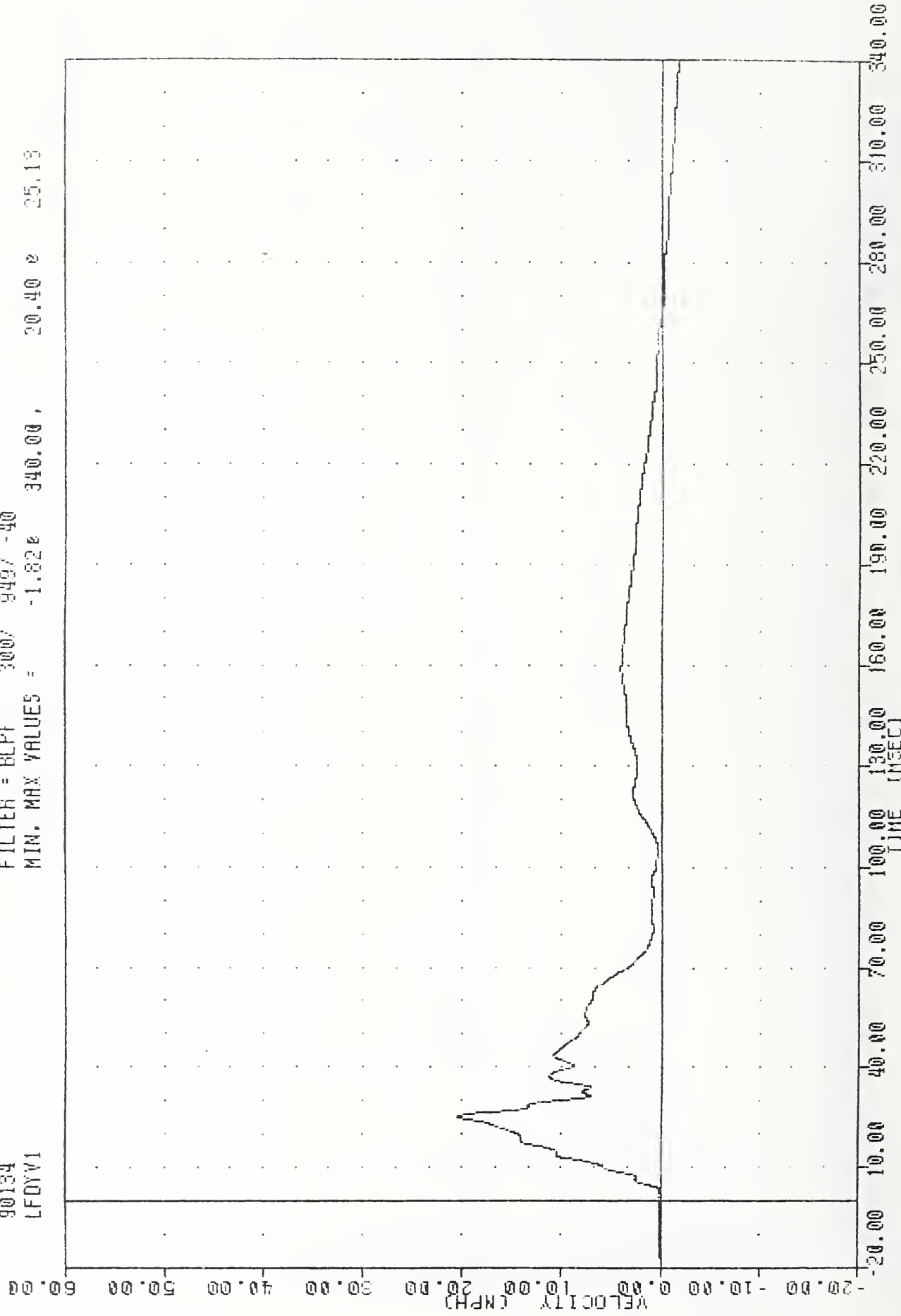
FILTER = BLPF 100/ 315/ -40  
MIN. MAX VALUES = -100.74 31.63, 56.52 14.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE LEFT FRONT DOOR (POSITION 6) Y AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LFDVV1

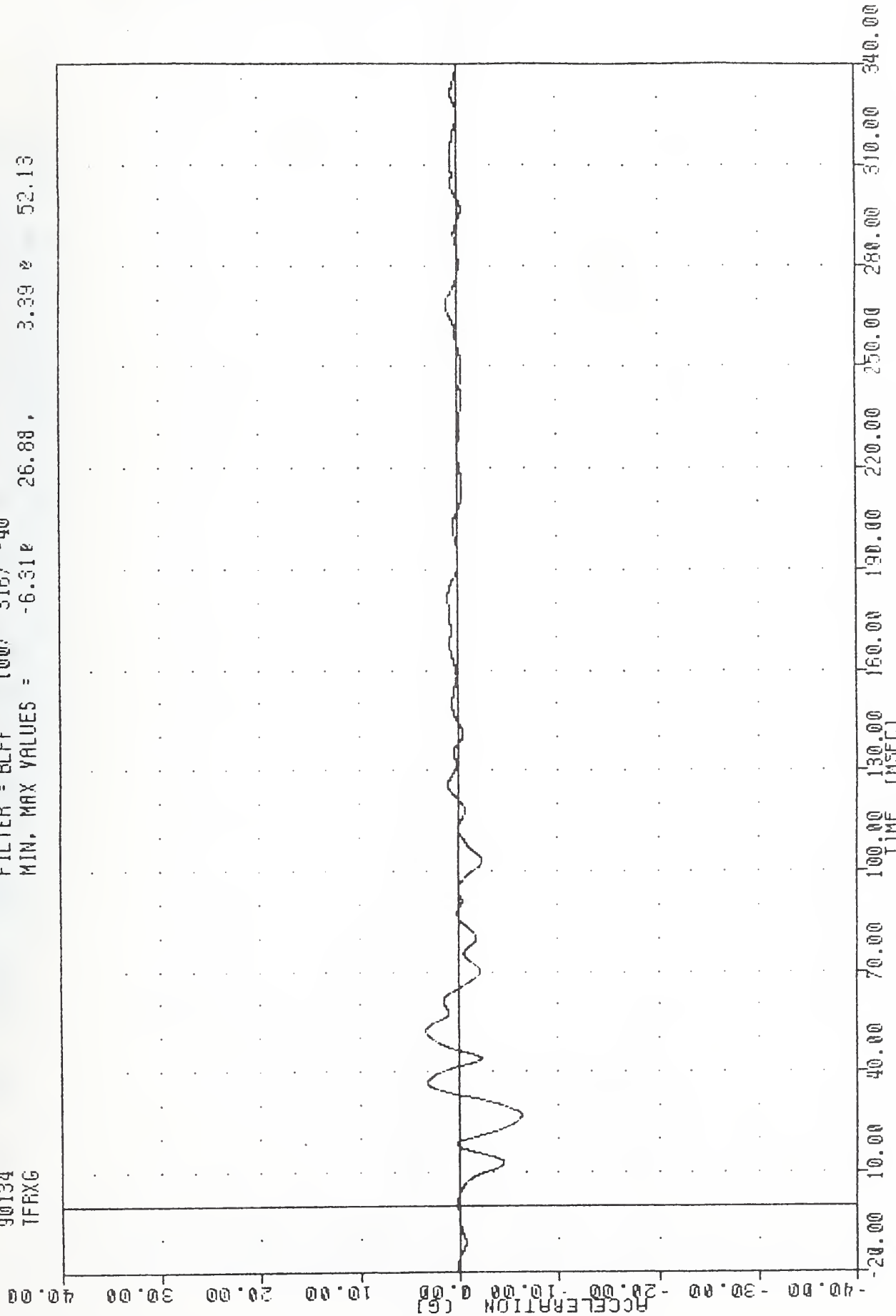
FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -1.826 340.00, 20.40 2 25.13



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE LEFT FRONT DOOR (POSITION 6) Y AXIS VELOCITY

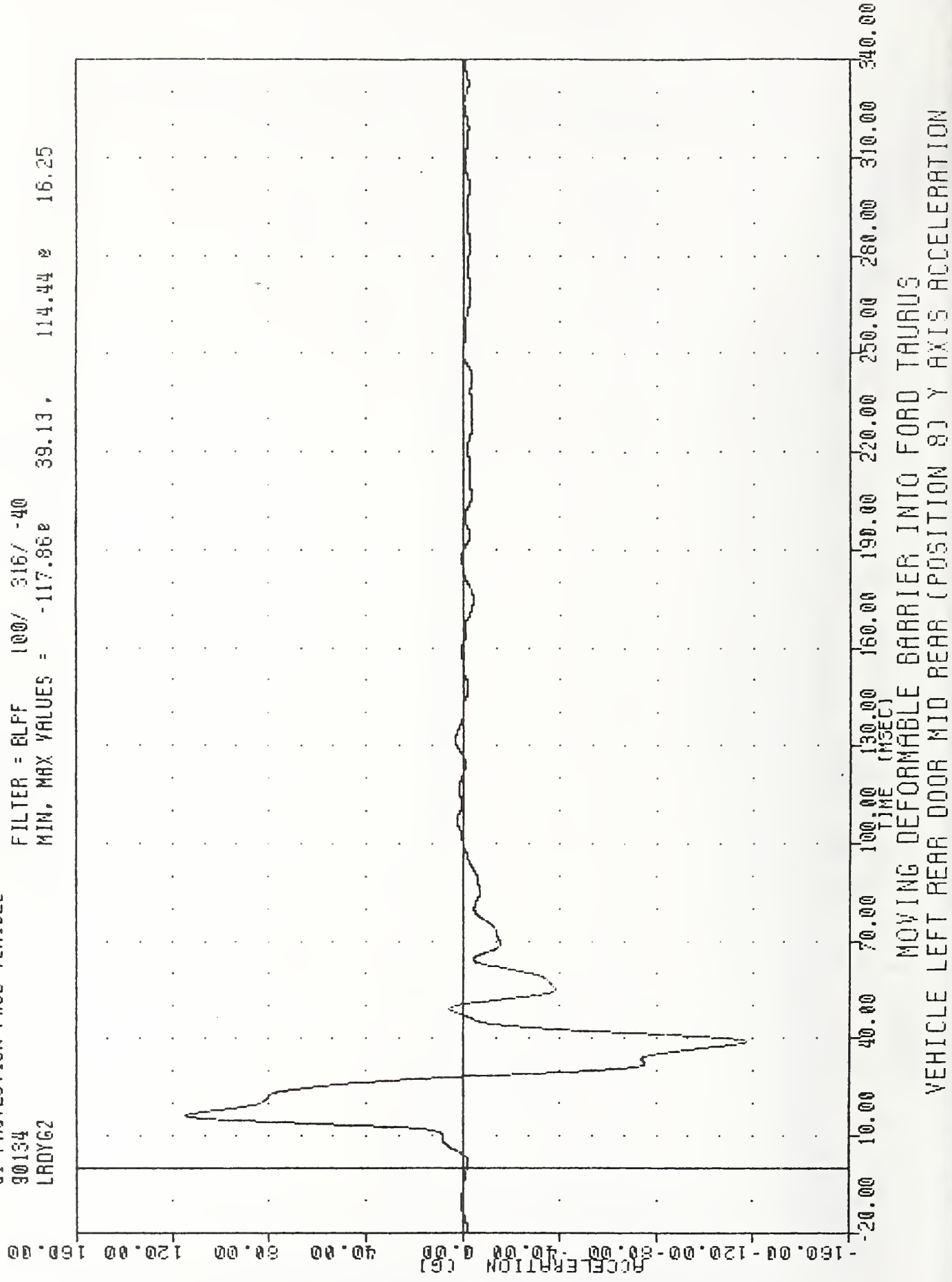
VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
TFRXG

FILTER = BLPF 100/ 315/ -40  
MIN. MAX VALUES = -6.31E 26.88, 3.39 E 52.13



VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LADY62

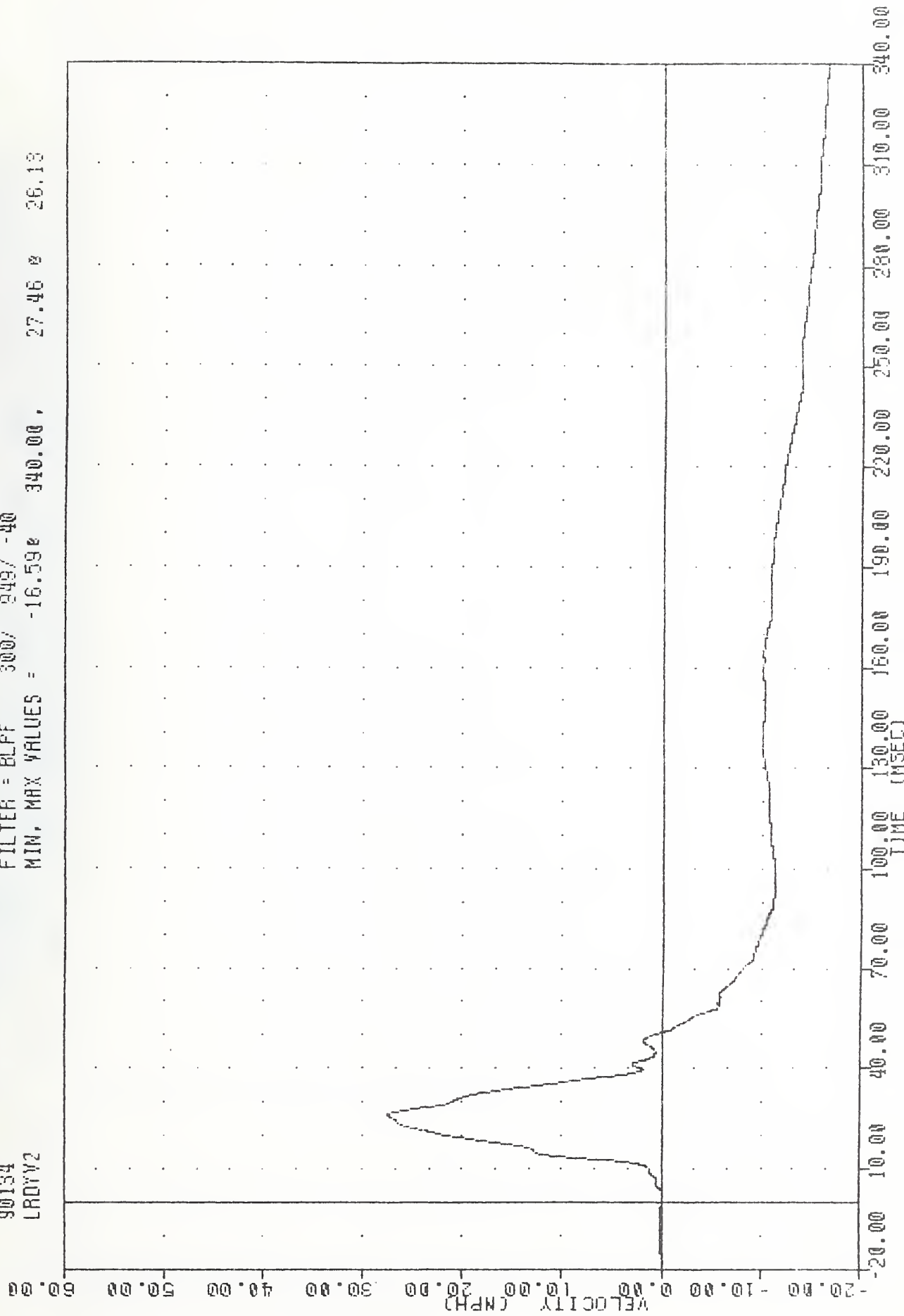
FILTER = BLPF 100/ 316/ -40  
MIN, MAX VALUES = -117.86e 39.13 , 114.44 e 16.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE LEFT REAR DOOR MID REAR (POSITION 8) Y AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION FROM VEHICLE  
90134  
LRDYV2

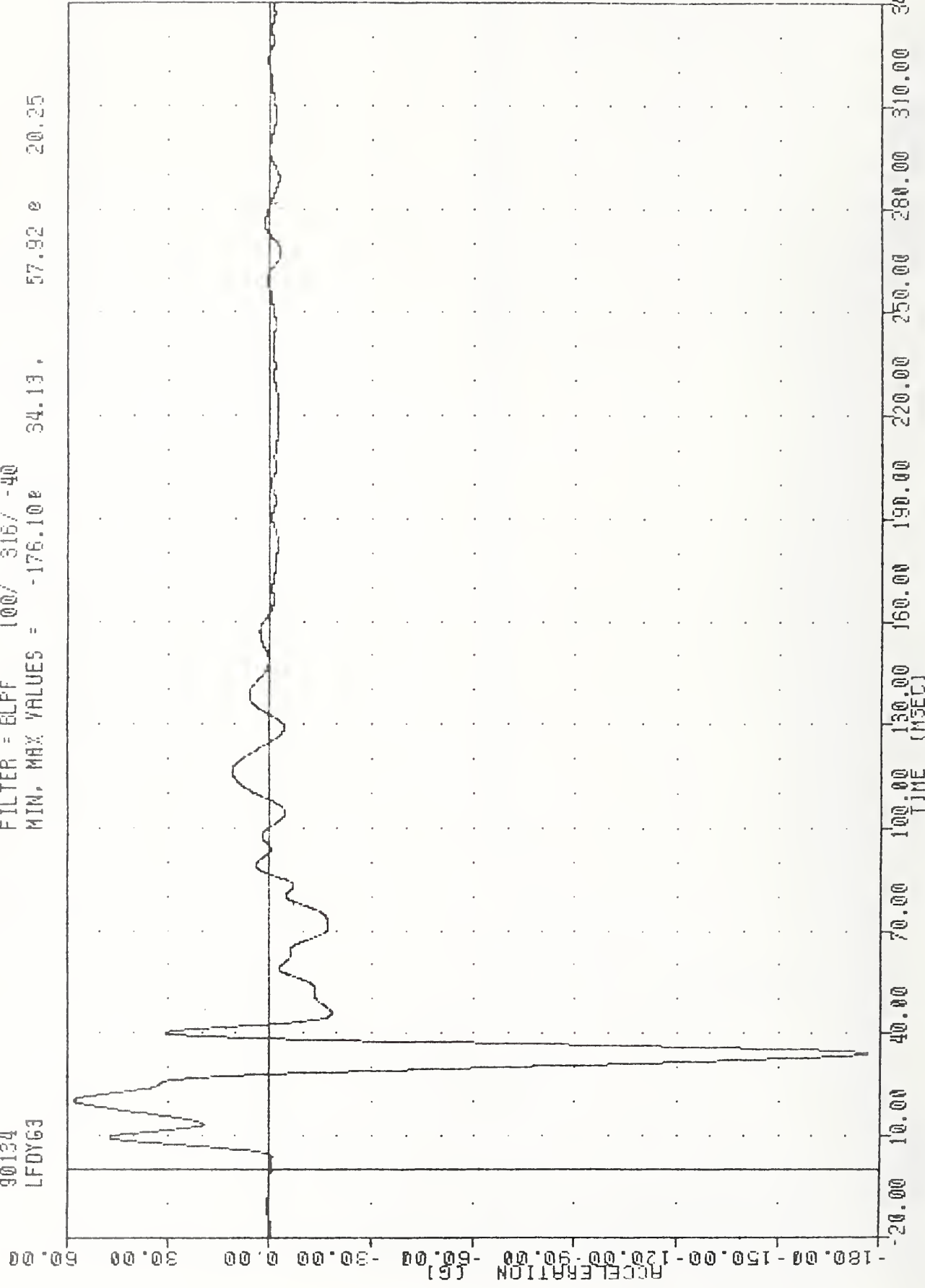
FILTER = BLPF 300/ 249/ -40  
MIN. MAX VALUES = -16.59e 340.00 , 27.46 e 26.13



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE LEFT REAR DOOR MID REAR (POSITION 8) Y AXIS VELOCITY

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LFDY63

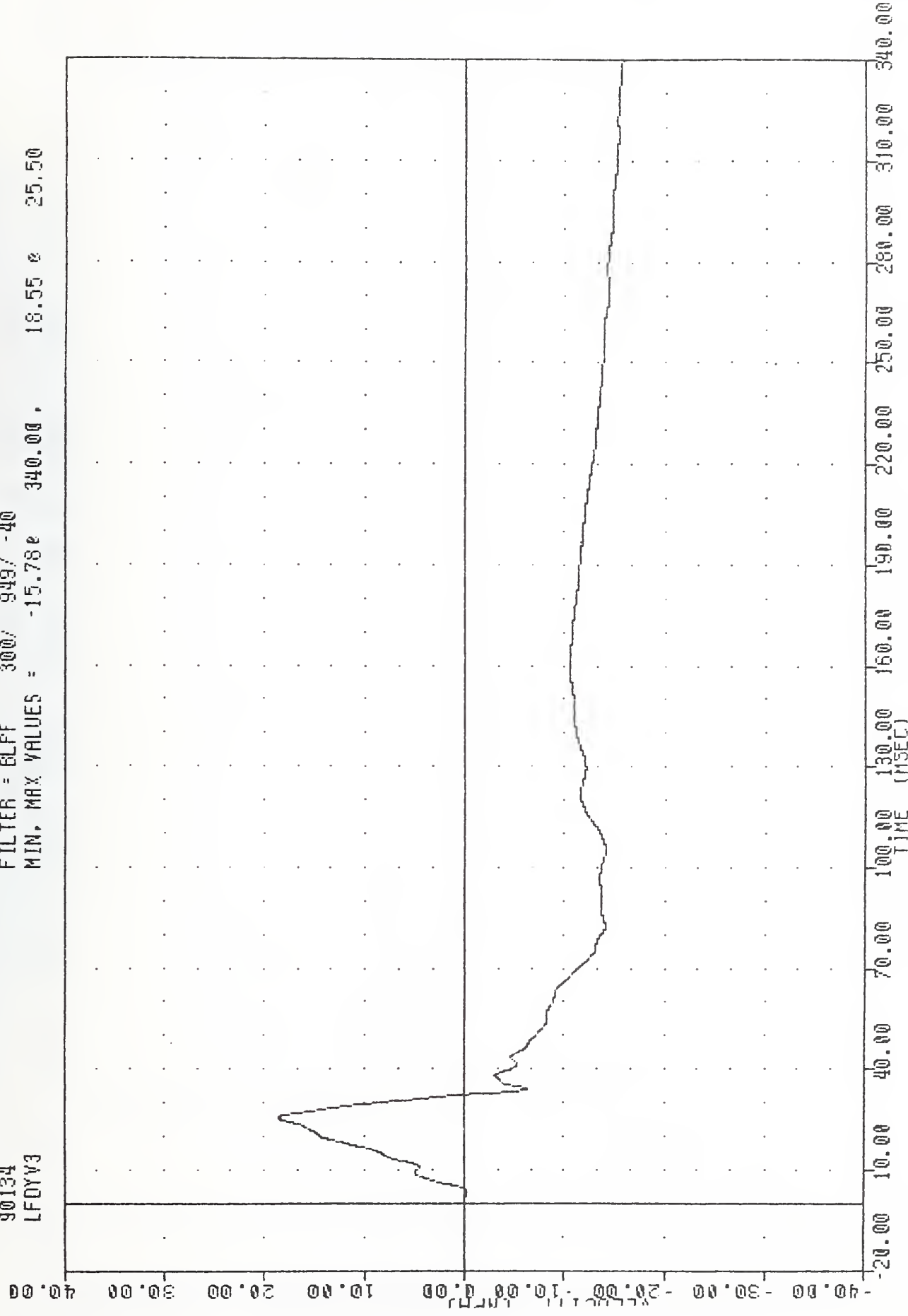
FILTER = BLFF 100/ 316/ -40  
MIN. MAX VALUES = -176.10e 34.13 , 57.92 e 20.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE LEFT FRONT DOOR (POSITION 9) Y AXIS ACCELERATION

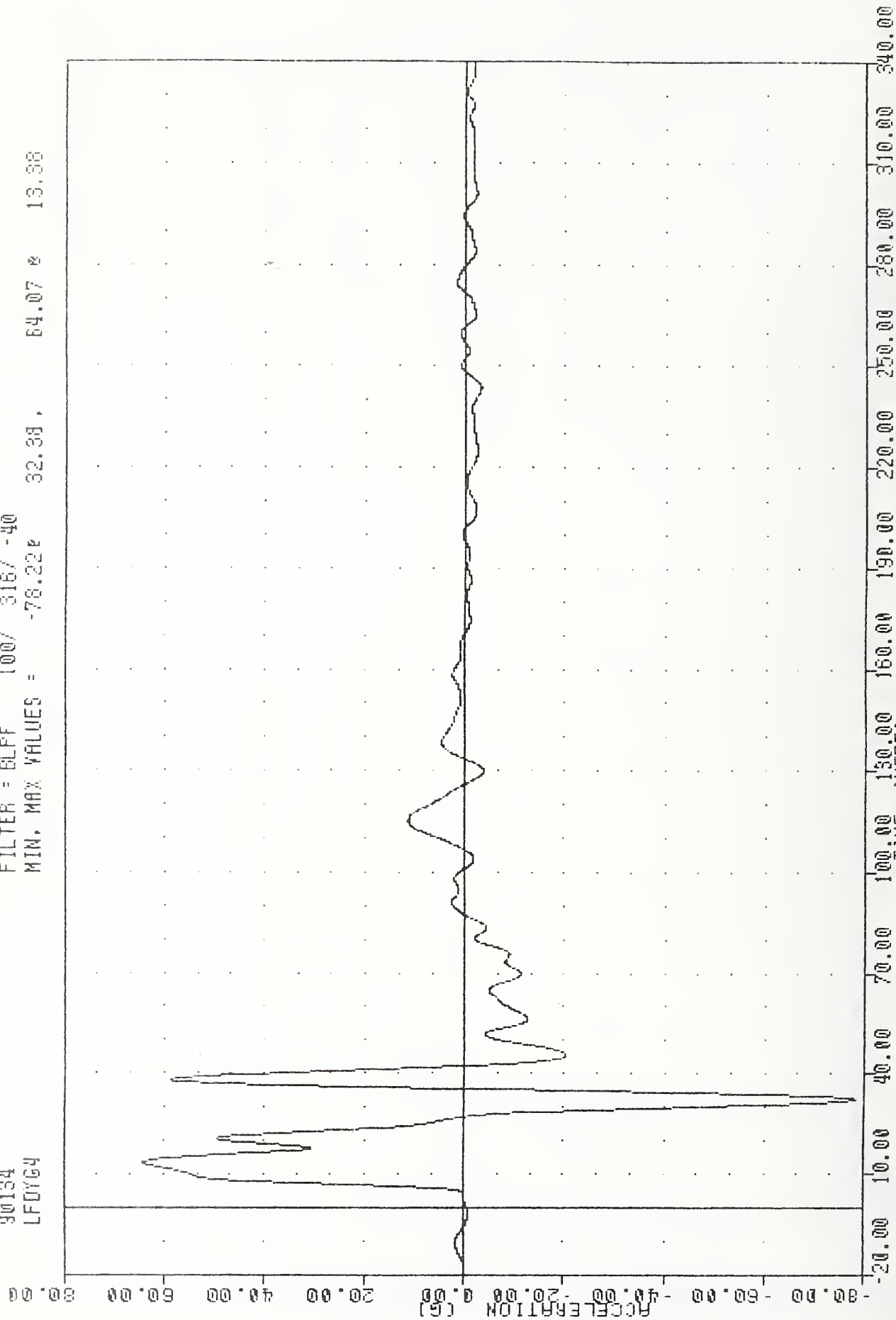
VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LFDYV3

FILTER = BLFF 300/ 949/ -40  
MIN. MAX VALUES = -15.78e 340.00 . 18.55 e 25.50



VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LFOY64

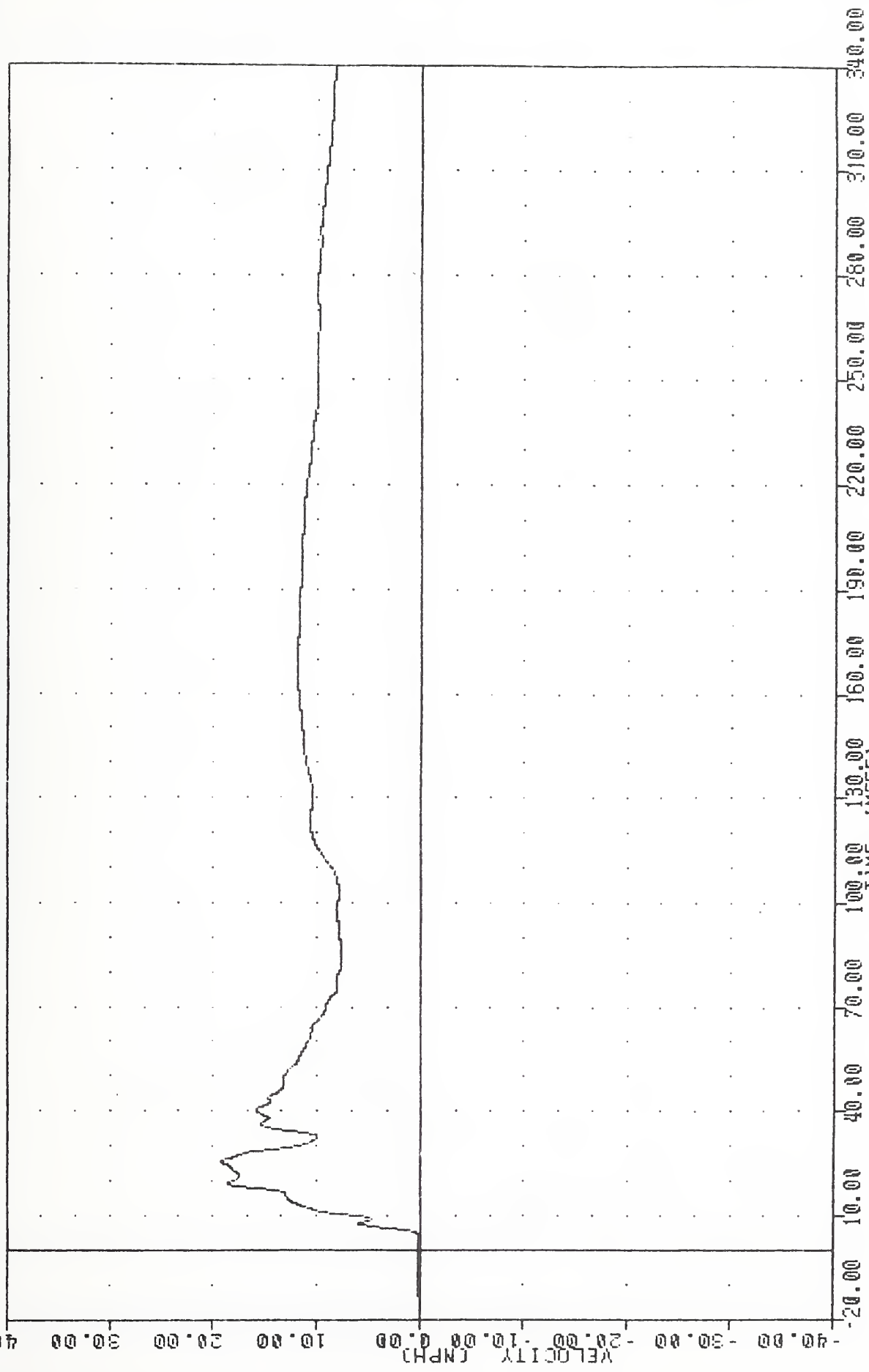
FILTER = BLFF 100/ 318/ -40  
MIN. MAX VALUES = -78.22P 32.38 , 64.07 & 13.38



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE LEFT FRONT DOOR (POSITION 10) Y AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LFDYV4

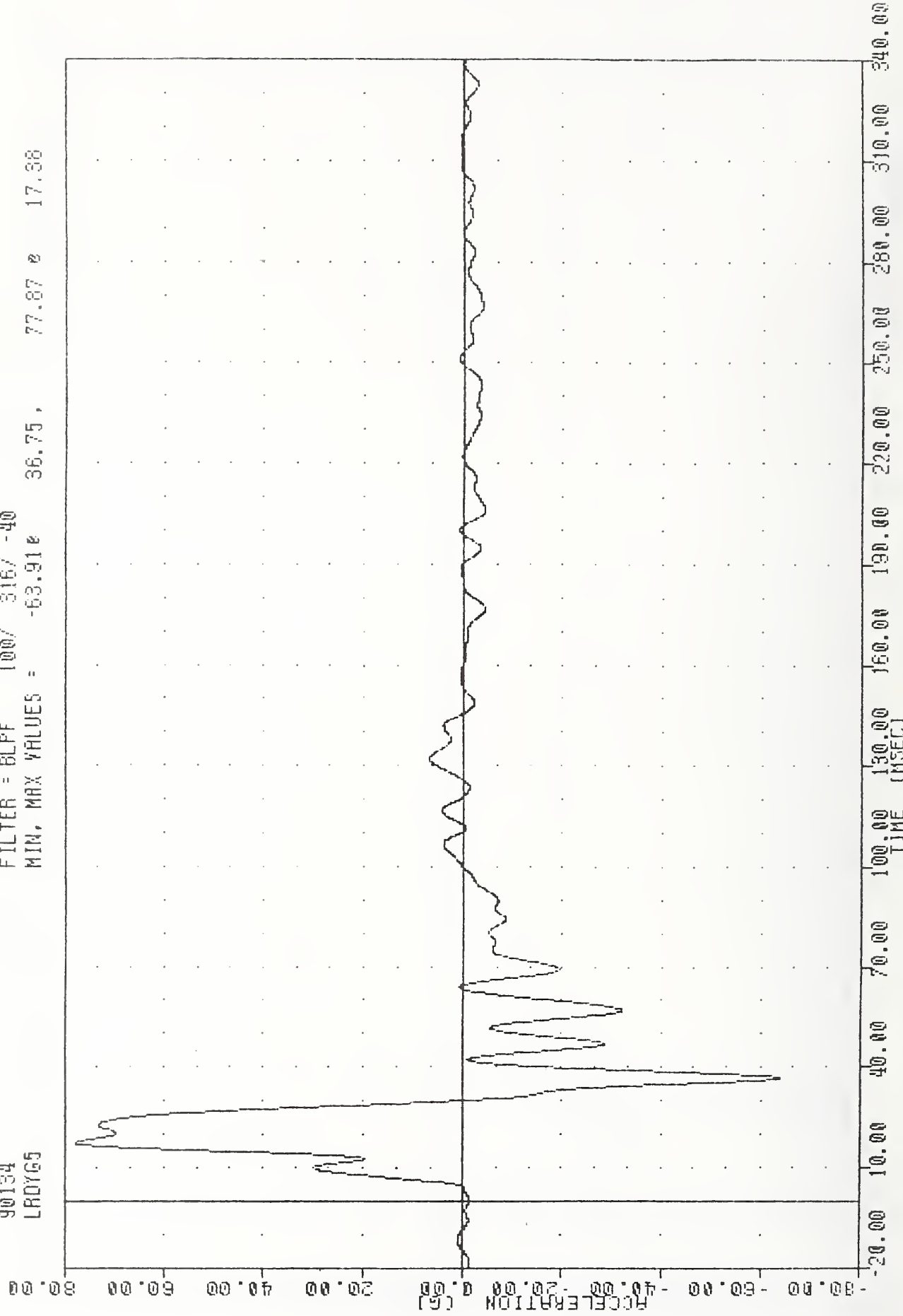
FILTER = BLFF 300/ 949/ -40  
MIN. MAX VALUES = 0.00e -20.00 , 19.14 e 25.50



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE LEFT FRONT DOOR (POSITION 10) Y AXIS VELOCITY

VRTC , 900514  
SI PROTECTION PROO VEHICLE  
90134  
LRDY65

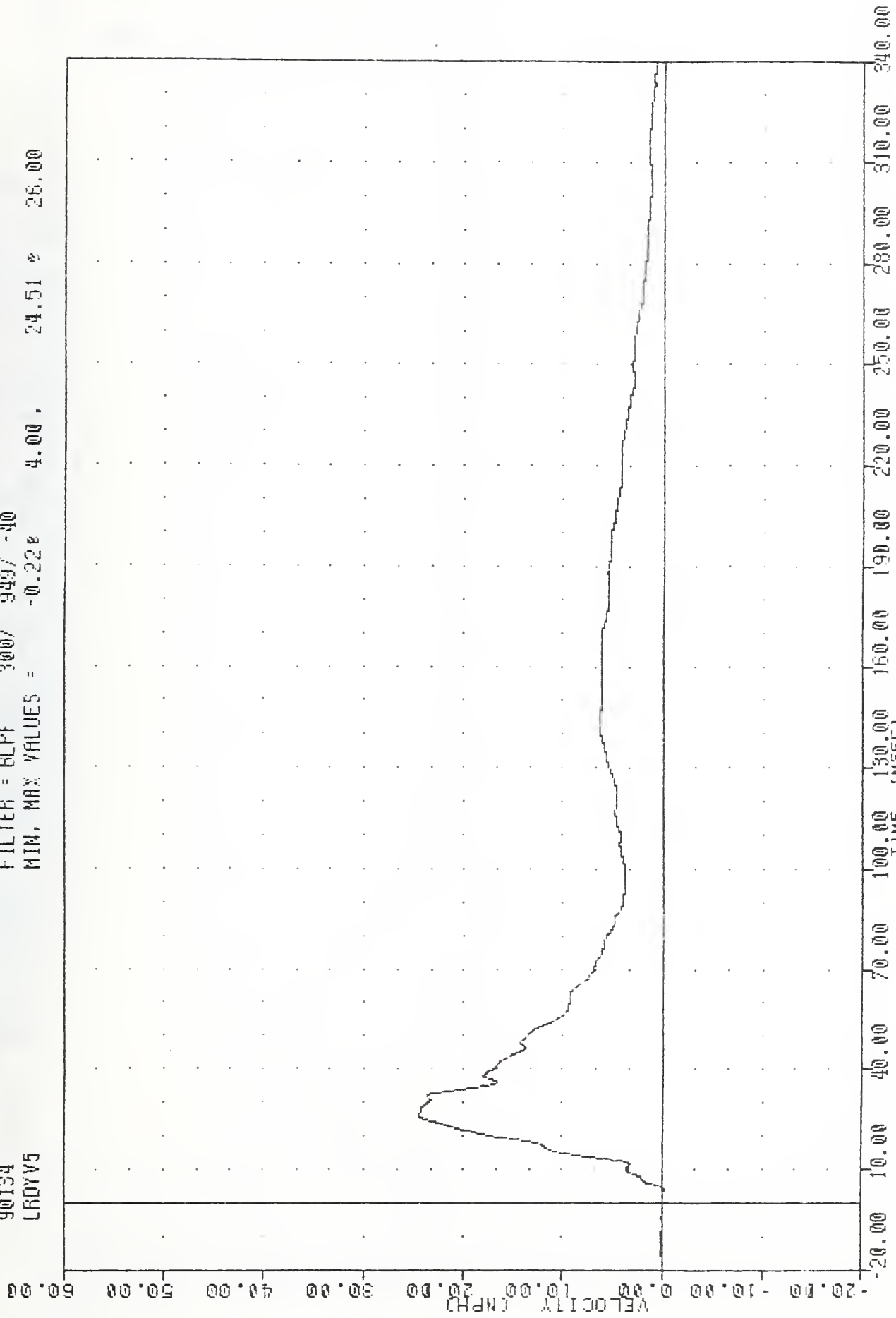
FILTER = BLPF 100/ 316/ -40  
MIN, MAX VALUES = -63.91e 36.75, 77.87 e 17.38



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE LEFT REAR DOOR CENTERLINE (POSITION 11) Y AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
LRDYV5

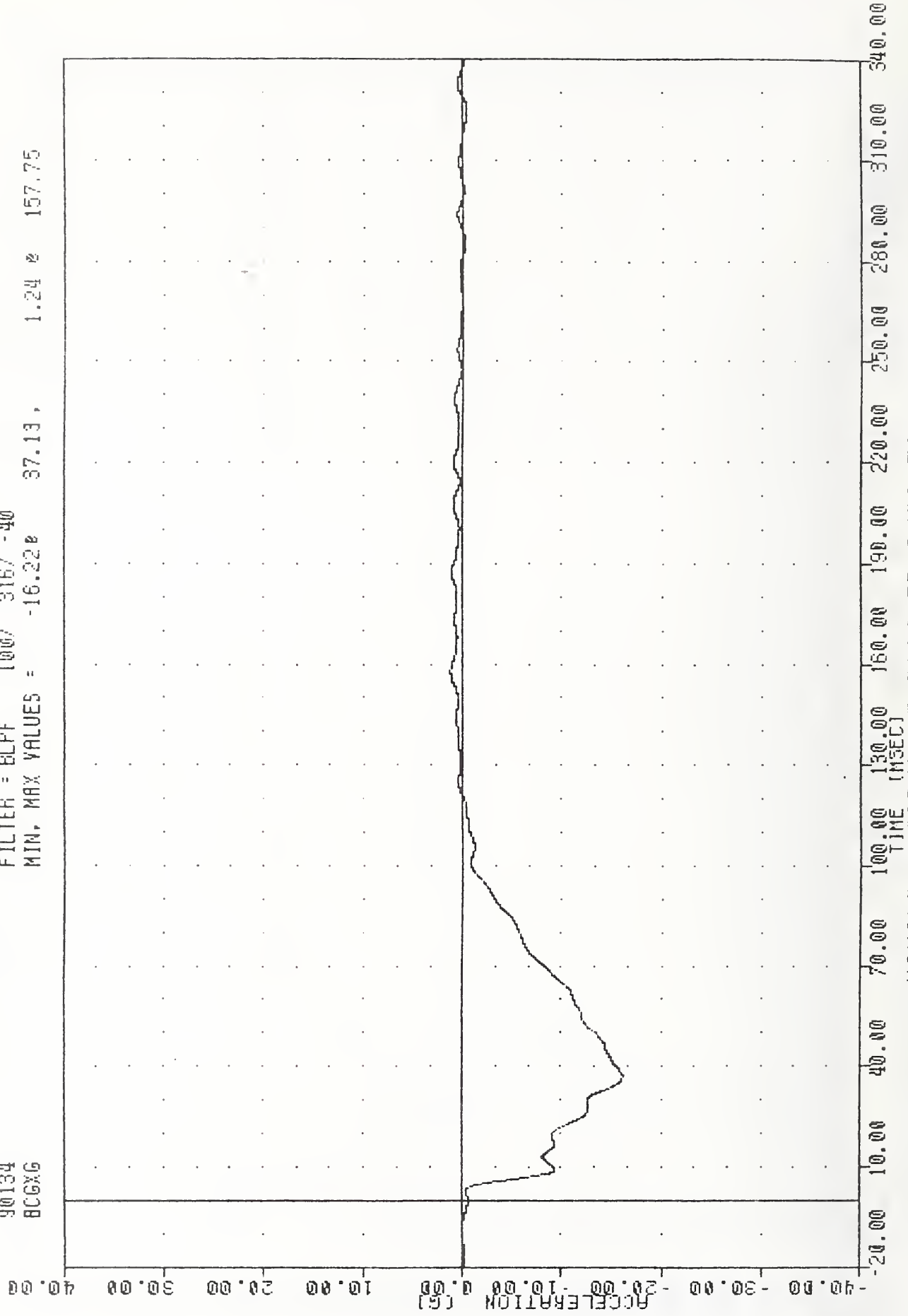
FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -0.22e 4.00 , 24.51 e 26.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
VEHICLE LEFT REAR DOOR CENTERLINE (POSITION 11) Y AXIS VELOCITY

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 BCGXG

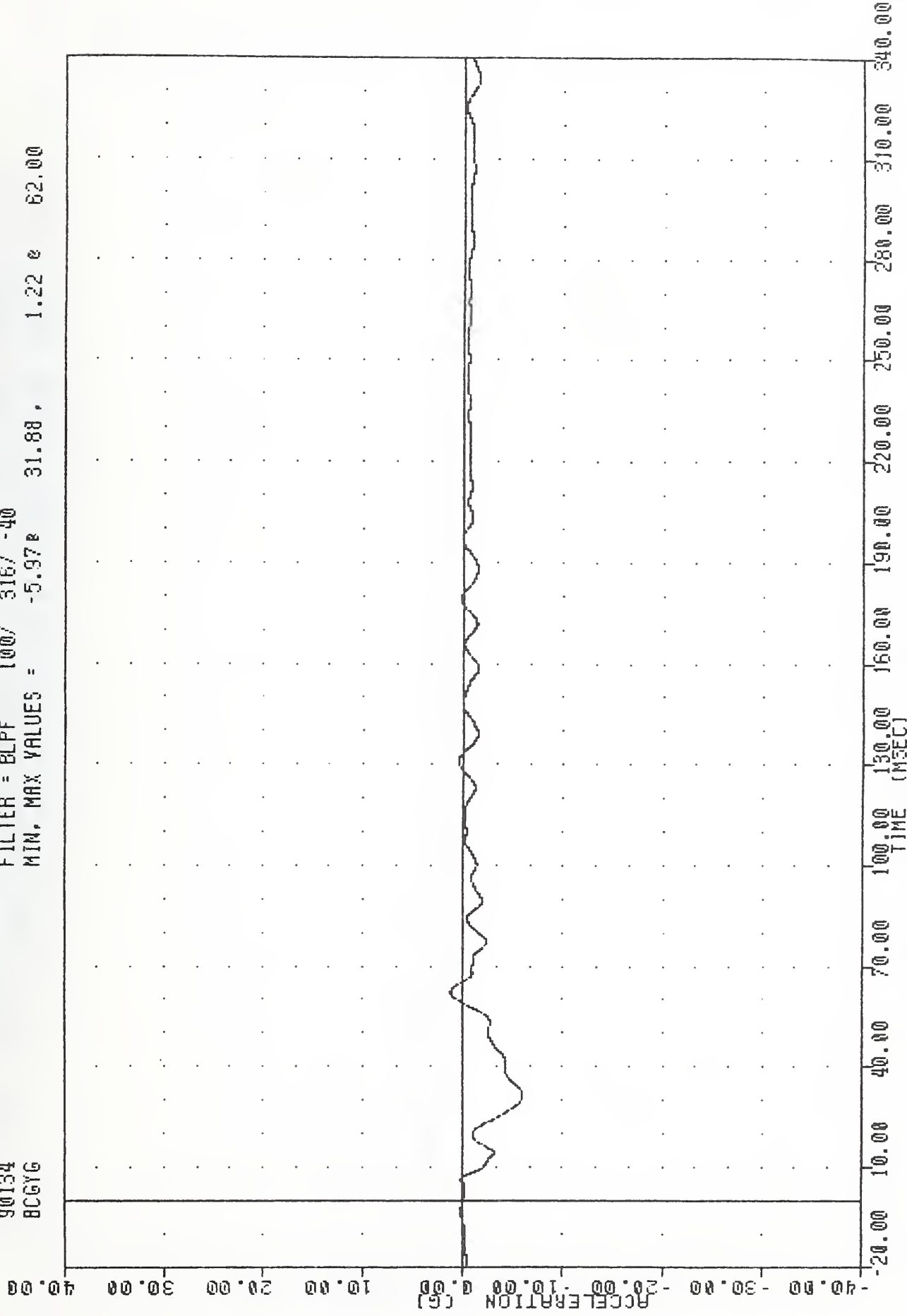
FILTER = BLPF 100/ 316/ -40  
 MIN. MAX VALUES = -16.22 37.13, 1.24 157.75



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 BARRIER CENTER OF GRAVITY Y AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION PROD VEHICLE  
90134  
BCGYG

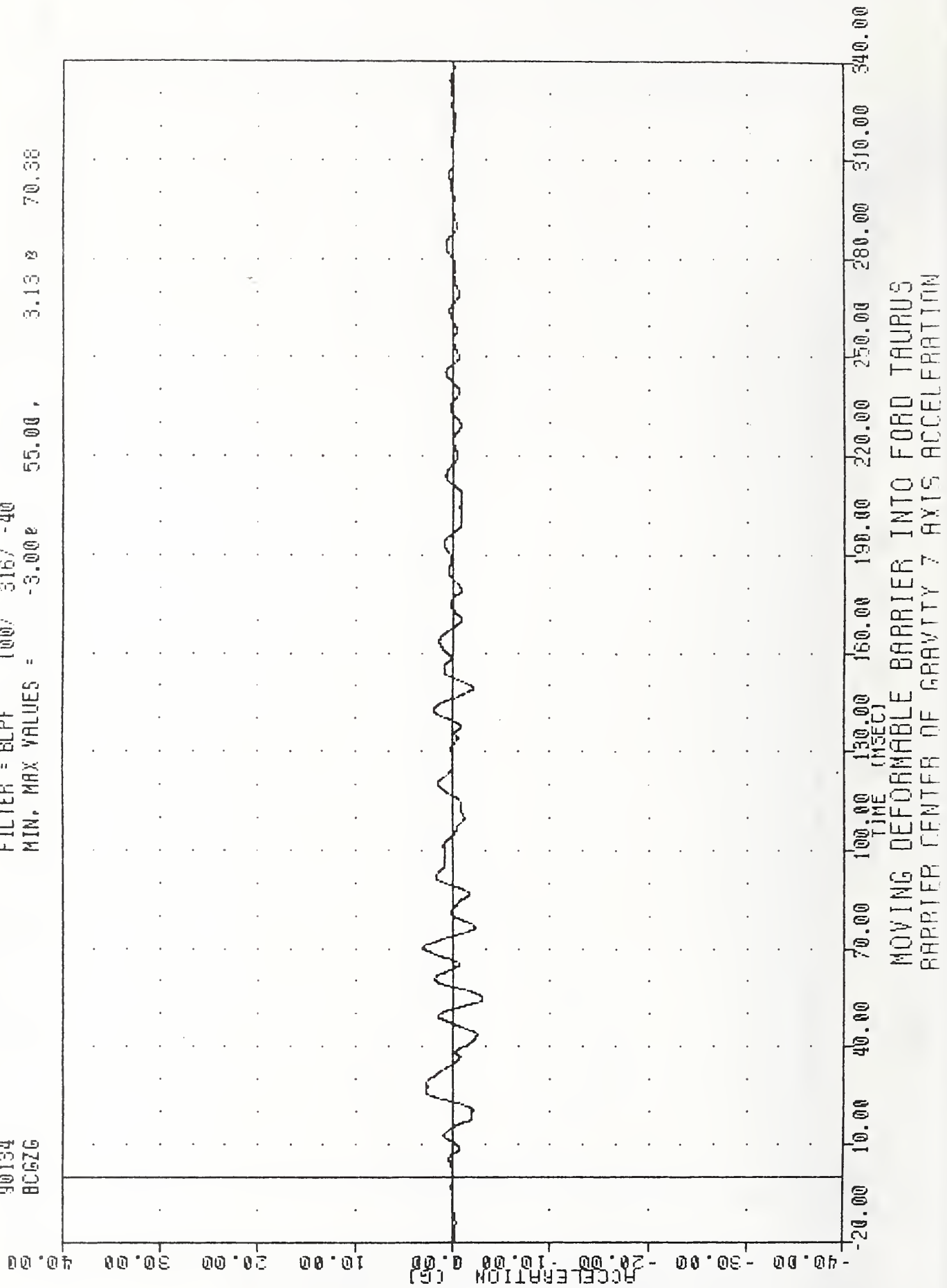
FILTER = BLPF 100/ 316/ -40  
MIN. MAX VALUES = -5.97g 31.88 , 1.22 g 62.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
BARRIER CENTER OF GRAVITY Y AXIS ACCELERATION

NRATC . 900514  
SI PROTECTION PROD VEHICLE  
90134  
BC6ZG

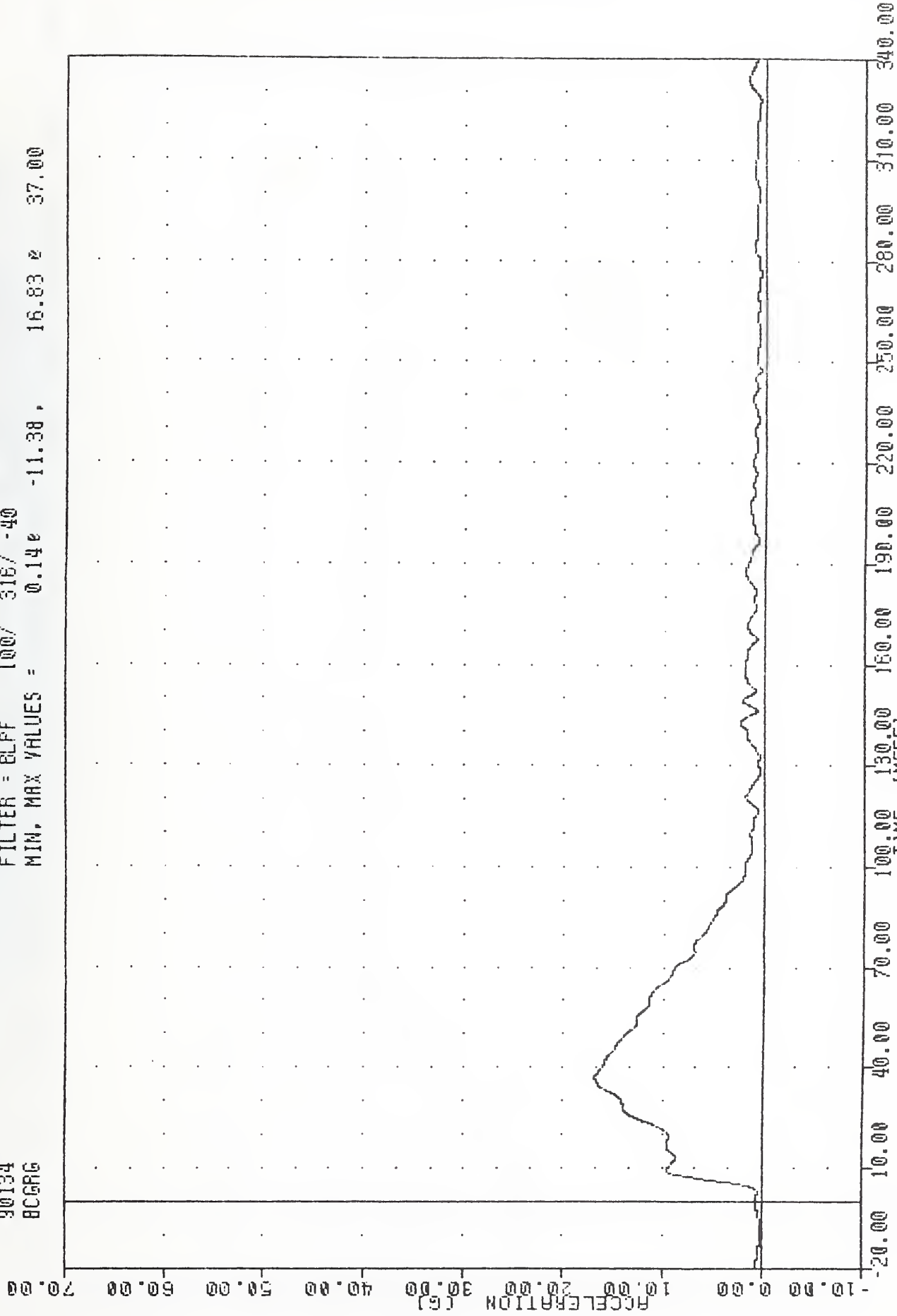
FILTER = BLPF 100/ 316/ -40  
MIN. MAX VALUES = -3.00e 55.00 , 3.13 e 70.38



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
BARRIER CENTER OF GRAVITY 7 AXIS ACCELERATION

YRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 BCGRG

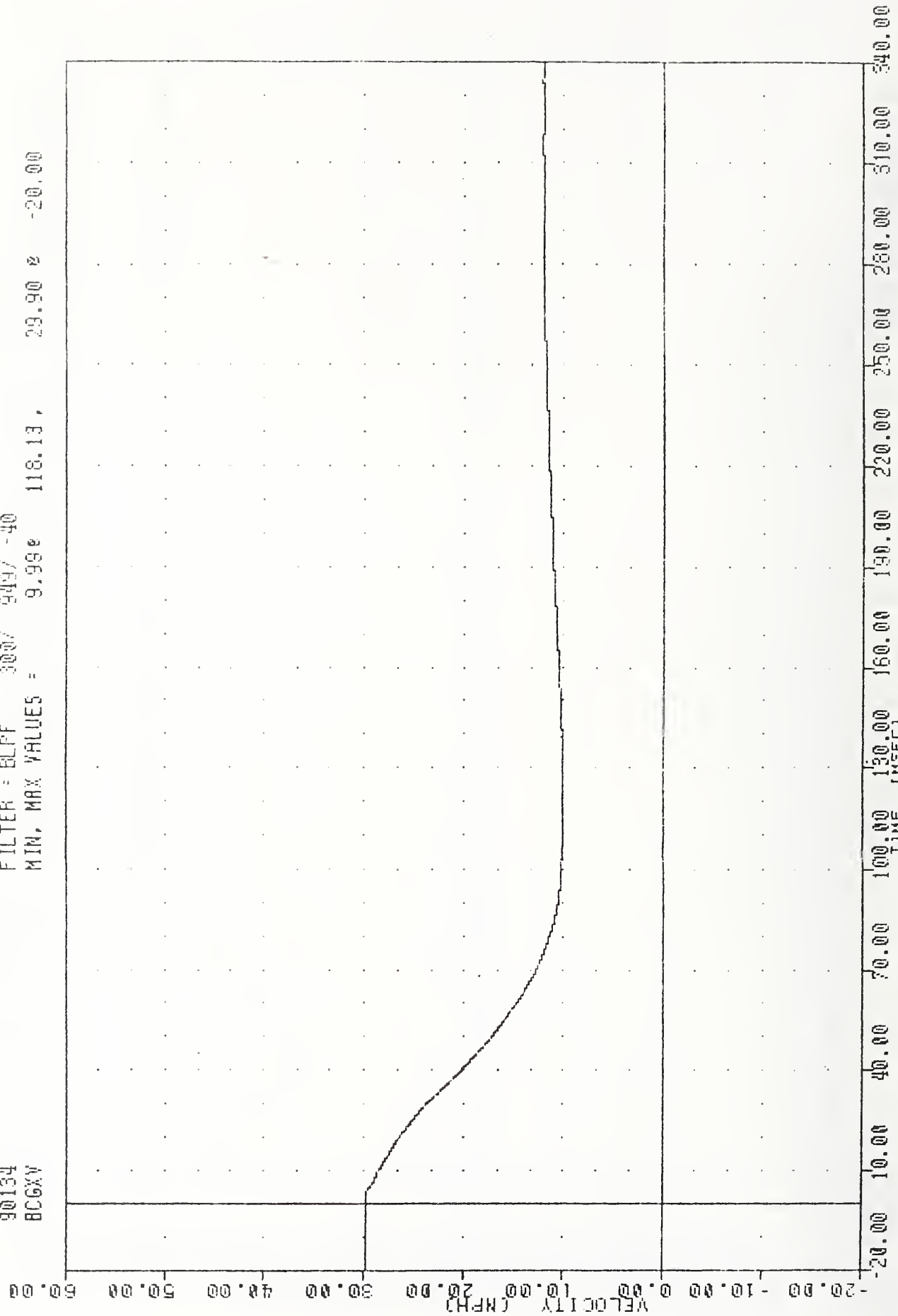
FILTER = BLFF 100/ 315/ -40  
 MIN, MAX VALUES = 0.14e -11.38, 16.83 e 37.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 BARRIER CENTER OF GRAVITY RESULTANT ACCELERATION

VRTC , 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 BCGXV

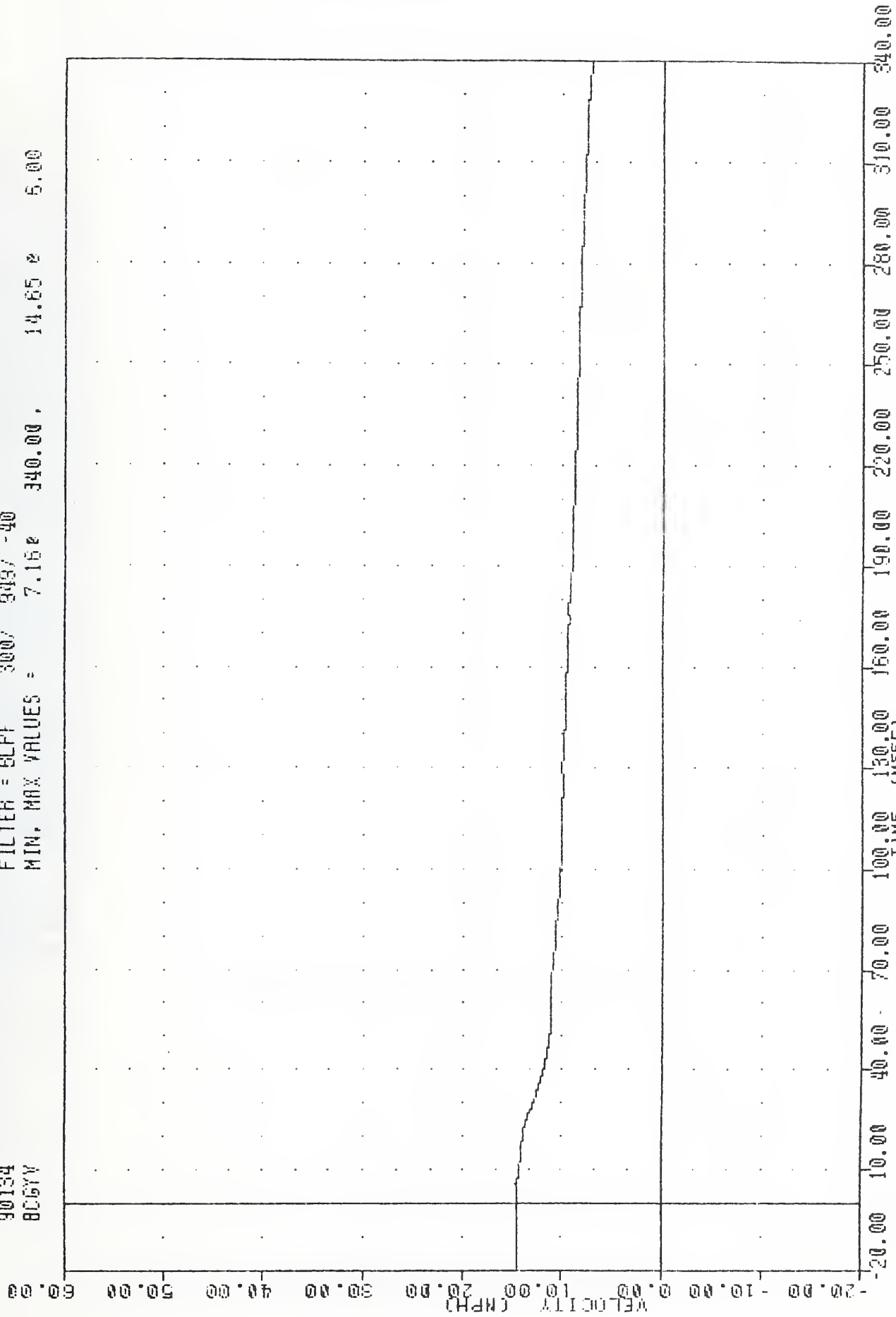
FILTER = BLPF 300/ 949/ -40  
 MIN, MAX VALUES = 9.99e 118.13, 29.90 e -20.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 BARRIER CENTER OF GRAVITY X AXIS VELOCITY

VRTC , 900514  
 SI PROTECTION PROO VEHICLE  
 90134  
 BCGY

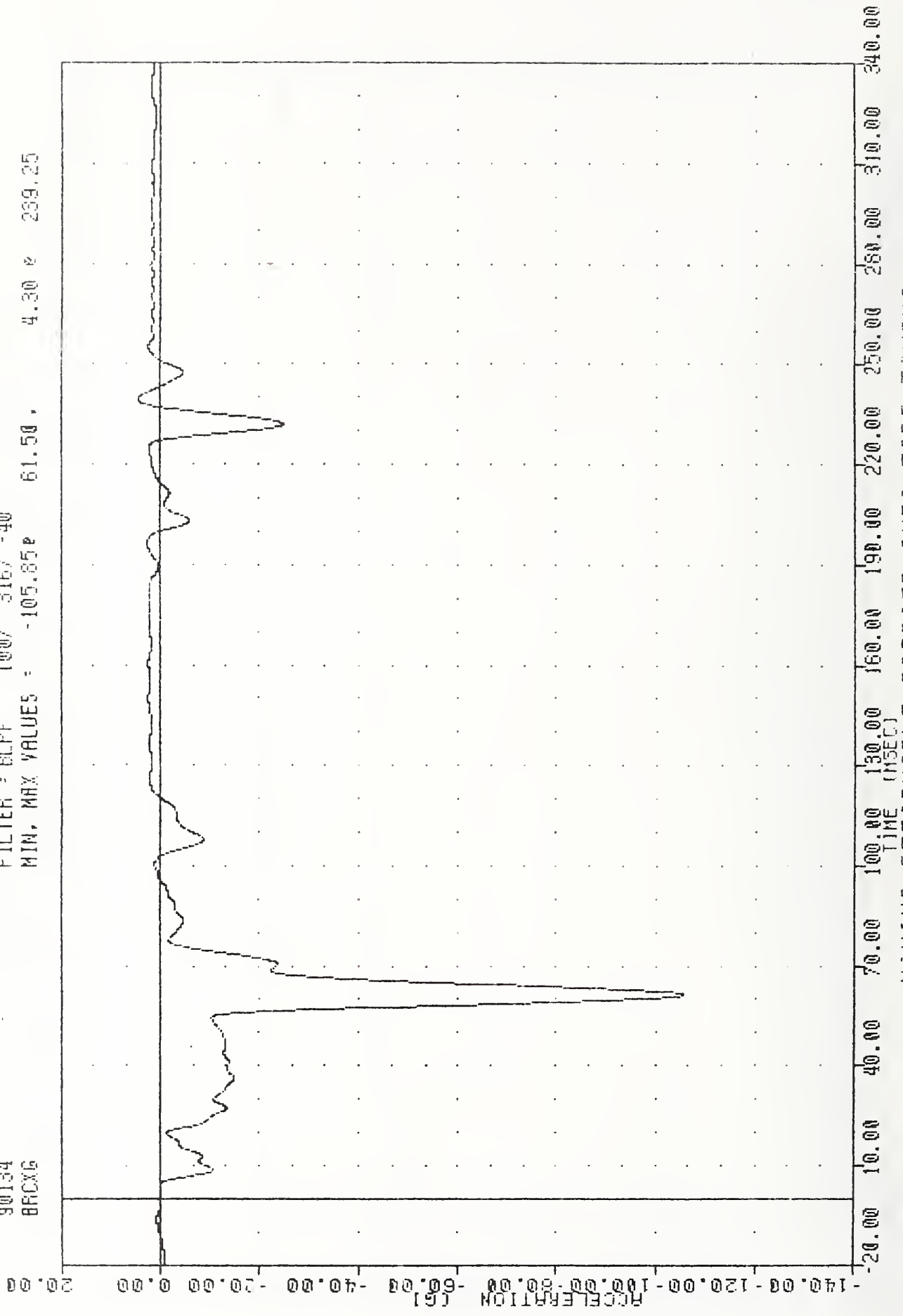
FILTER = BLFF 300/ 949/ -40  
 MIN. MAX VALUES = 7.16e 340.00 , 14.65 e 5.00



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 BARRIER CENTER OF GRAVITY Y AXIS VELOCITY

NRTC  
SI PROTECTION FROD VEHICLE  
90134  
BRCXG

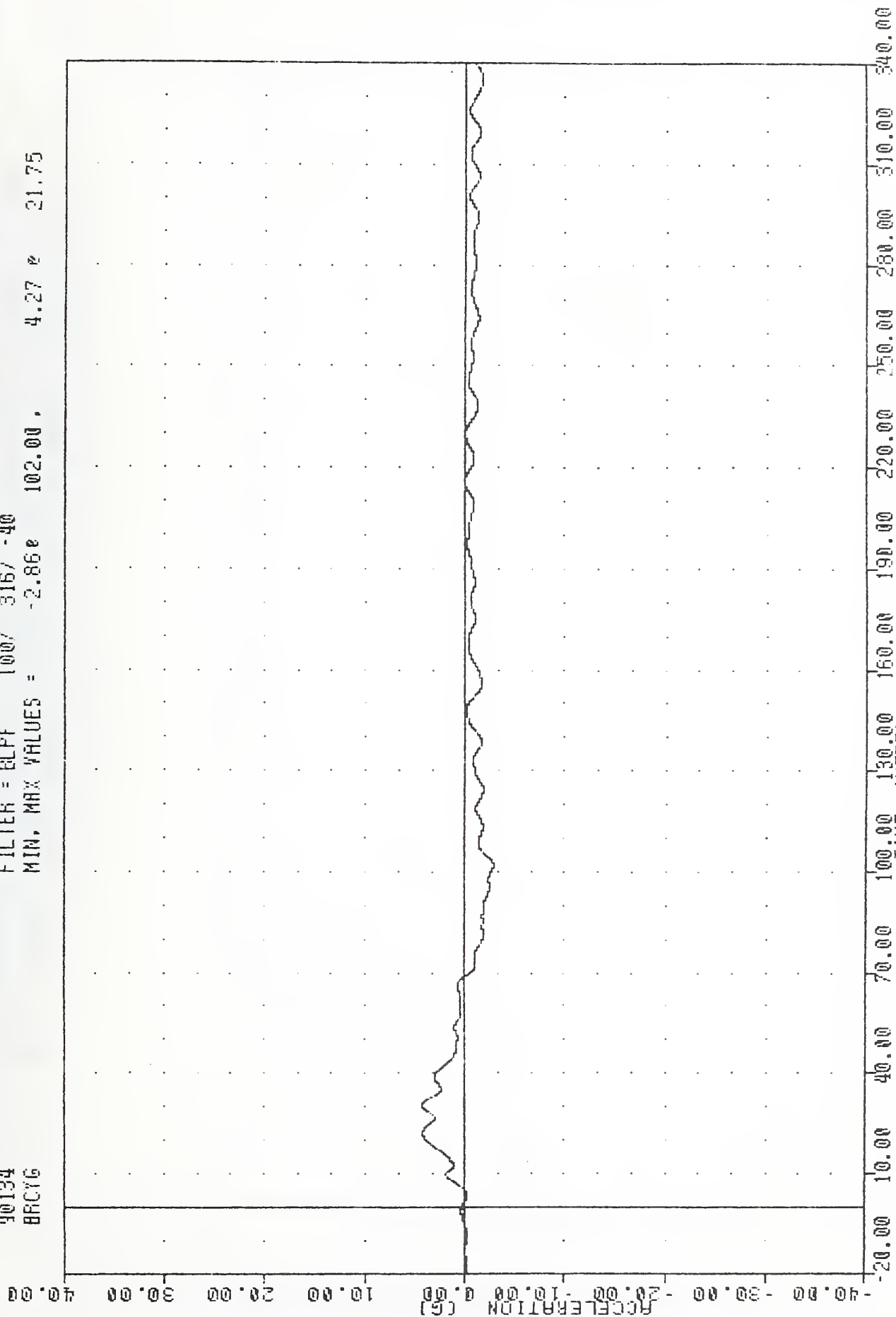
FILTER = BLPF 100/ 316/ -40  
MIN, MAX VALUES = -105.85e 61.50, 4.30 e 269.25



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
BARRIER REAR CROSSMEMBER X AXIS ACCELERATION

VRTC , 900514  
SI PROTECTION FROM VEHICLE  
90134  
BRCYG

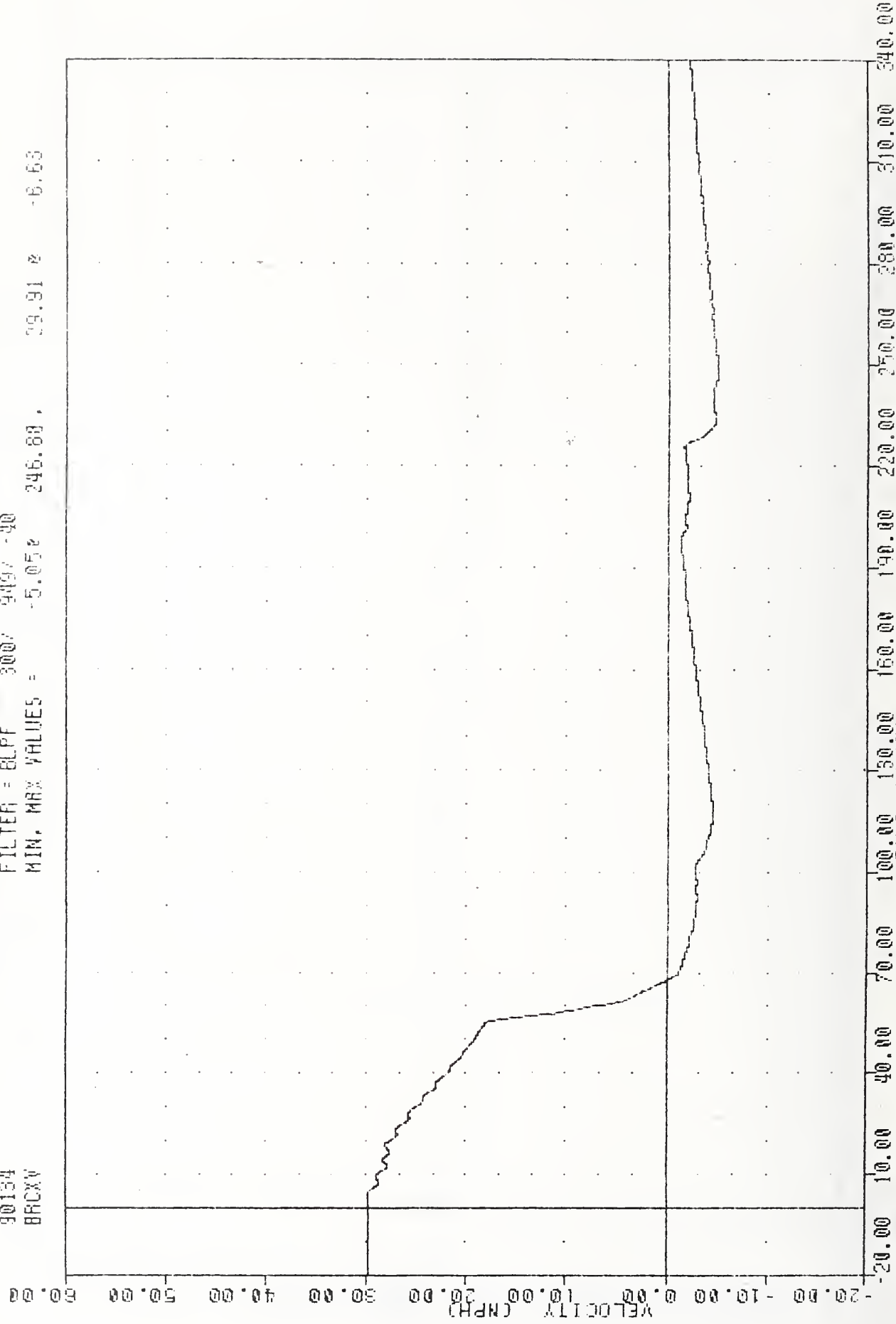
FILTER = BLPF 100/ 316/ -40  
MIN, MAX VALUES = -2.86e 102.00, 4.27 e 21.75



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
RARRIFR REAR CROSSMEMBER Y AXIS ACCELERATION

NRIC , 900514  
 S1 PROTECTION PROD VEHICLE  
 90134  
 BRXXV

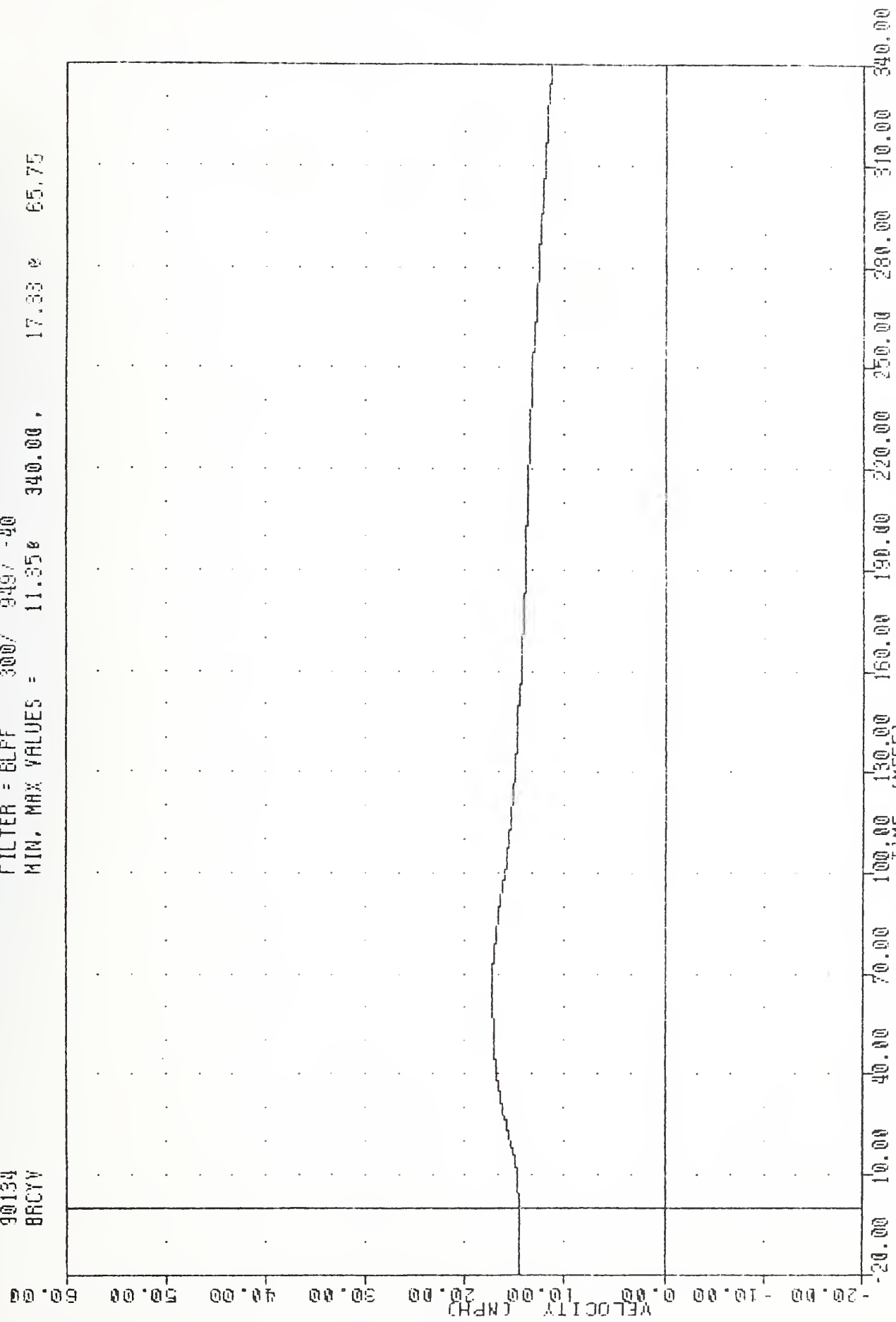
FILTER = BLPF 300V 949V -40  
 MIN. MAX VALUES = -5.05V 246.88V -6.63



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 BARRIER REAR CROSSMEMBER X AXIS VELOCITY

VRTC 900514  
 SI PROTECTION PROD VEHICLE  
 90134  
 BRCTV

FILTER = BLPF 300/ 949/ -40  
 MIN. MAX VALUES = 11.35% 340.00, 17.33 % 65.75



MOVING DEFORMABLE BARRIER INTO FORD TAURUS  
 BARRIER REAR CROSSMEMBER Y AXIS VELOCITY



APPENDIX C

DUMMY CERTIFICATION



APPENDIX D

DUMMY CALIBRATION



DRIVER DUMMY

DUMMY NO.: 01



# BIOSID CALIBRATION RESULTS

PRE-TEST CALIBRATION FOR TEST #900514

DUMMY NO. 01 SERIES NO. TRC-CAL 8 DATE 05/10/90

CALIBRATION TEST	SAE* CORRIDOR	RESULTS
SHOULDER		
IMPACT FORCE (kN)	3.7 - 4.6	3.88
SHOULDER ACCEL. (g)	NA	84.1
SHOULDER DISPL. (mm)	21 - 31	25.5
THORAX - NO ARM		
IMPACT FORCE (kN)	5.4 - 6.7	6.1
UPPER RIB ACCEL. (g)	120 - 180	161.1
CENTER RIB ACCEL. (g)	120 - 180	159.3
LOWER RIB ACCEL. (g)	120 - 180	163.6
UPPER RIB DISPL. (mm)	50 - 70	60.7
CENTER RIB DISPL. (mm)	50 - 70	63.8
LOWER RIB DISPL. (mm)	50 - 70	64.5
UPPER SPINE ACCEL. (g)	16 - 24	22.1
LOWER SPINE ACCEL. (g)	11 - 17	14.7
THORAX - ARM DOWN		
IMPACT FORCE (kN)	6.2 - 7.9	6.30
SHOULDER ACCEL. (g)	NA	46.1
UPPER RIB ACCEL. (g)	52 - 78	68.8
CENTER RIB ACCEL. (g)	66 - 99	90.1
LOWER RIB ACCEL. (g)	85 - 128	110.4
SHOULDER DISPL. (mm)	17 - 27	20.4
UPPER RIB DISPL. (mm)	20 - 30	26.3
CENTER RIB DISPL. (mm)	30 - 44	36.3
LOWER RIB DISPL. (mm)	40 - 55	47.2
UPPER SPINE ACCEL. (g)	34 - 46	34.9
LOWER SPINE ACCEL. (g)	14 - 21	14.9
ABDOMEN		
IMPACT FORCE (kN)	2.9 - 3.6	3.35
UPPER ABDOMEN ACCEL. (g)	52 - 80	67.3
LOWER ABDOMEN ACCEL. (g)	55 - 87	66.5
UPPER ABDOMEN DISPL. (mm)	40 - 55	48.8
LOWER ABDOMEN DISPL. (mm)	38 - 52	42.1
UPPER SPINE ACCEL. (g)	5.4 - 8.1	7.9
LOWER SPINE ACCEL. (g)	8 - 12	9.8
PELVIS		
IMPACT FORCE (kN)	7.5 - 9.5	8.85
PELVIS ACCEL. (g)	45 - 63	55.2

\*PROPOSED SAE CORRIDORS; DRAFT BIOSID USER'S MANUAL, MAY 1990.

LEFT REAR PASSENGER DUMMY

DUMMY NO.: 02

# BIOSID CALIBRATION RESULTS

## PRE-TEST CALIBRATION FOR TEST #900514

DUMMY NO. 02 SERIES NO. TRC-CAL 3 DATE 05/11/90

CALIBRATION TEST	SAE* CORRIDOR	RESULTS
SHOULDER		
IMPACT FORCE (kN)	3.7 - 4.6	3.94
SHOULDER ACCEL. (g)	NA	80.6
SHOULDER DISPL. (mm)	21 - 31	25.1
THORAX - NO ARM		
IMPACT FORCE (kN)	5.4 - 6.7	5.73
UPPER RIB ACCEL. (g)	120 - 180	152.4
CENTER RIB ACCEL. (g)	120 - 180	151.9
LOWER RIB ACCEL. (g)	120 - 180	155.8
UPPER RIB DISPL. (mm)	50 - 70	57.6
CENTER RIB DISPL. (mm)	50 - 70	64.4
LOWER RIB DISPL. (mm)	50 - 70	64.1
UPPER SPINE ACCEL. (g)	16 - 24	20.2
LOWER SPINE ACCEL. (g)	11 - 17	14.9
THORAX - ARM DOWN		
IMPACT FORCE (kN)	6.2 - 7.9	6.92
SHOULDER ACCEL. (g)	NA	64.4
UPPER RIB ACCEL. (g)	52 - 78	71.6
CENTER RIB ACCEL. (g)	66 - 99	88.9
LOWER RIB ACCEL. (g)	85 - 128	108.8
SHOULDER DISPL. (mm)	17 - 27	21.6
UPPER RIB DISPL. (mm)	20 - 30	24.8
CENTER RIB DISPL. (mm)	30 - 44	38.5
LOWER RIB DISPL. (mm)	40 - 55	48.3
UPPER SPINE ACCEL. (g)	34 - 46	38.0
LOWER SPINE ACCEL. (g)	14 - 21	14.8
ABDOMEN		
IMPACT FORCE (kN)	2.9 - 3.6	3.26
UPPER ABDOMEN ACCEL. (g)	52 - 80	66.3
LOWER ABDOMEN ACCEL. (g)	55 - 87	66.9
UPPER ABDOMEN DISPL. (mm)	40 - 55	43.5
LOWER ABDOMEN DISPL. (mm)	38 - 52	40.3
UPPER SPINE ACCEL. (g)	5.4 - 8.1	7.1
LOWER SPINE ACCEL. (g)	8 - 12	9.6
PELVIS		
IMPACT FORCE (kN)	7.5 - 9.5	8.58
PELVIS ACCEL. (g)	45 - 63	58.7

\*PROPOSED SAE CORRIDORS; DRAFT BIOSID USER'S MANUAL, MAY 1990.







TL 342 .E65

E1-Habash"

Evaluation  
dummy

Form DOT F 172  
FORMERLY FORM D

DOT LIBRARY



00092120